sublobata, 8–12 × 5–8μ. Setae myceliales numerosae, erectae, simplices, obtusae, subrectae, opace atrae, 2–3-septatae, usque ad 140 × 7–9μ deorsum non vel lenissime tumidae, extus leniter granulosae. Perithecia lateralia, breviter stipitata, nigra, globosa, usque ad 100μ diam., apice poro rotundato, circa 15μ diam., pertusa; paries verisimiliter unistratosus, parenchymaticus, cellulis angulosis, circa 15μ diam.; deorsum hyphis radiantibus ornata. Asci aparaphysati, 8–10, in ordine maturescentes, collabascentes, late ovati, 8-spori, sessiles, usque ad 50 × 25μ, in maturitate usque ad 80μ longi. Sporae inordinatae vel subparallelae, oblongae, obtusae, 1-septatae, leniter constrictae, leves, 18–22 × 7–8μ, brunnescentes, cellula superiore subglobosa, inferiore longiore et deorsum leniter attenuata.

Hab. in foliis *Canthii coprosmoidei*, Hastings R., New South Wales, L. Fraser, April 1952.

Colonies amphigenous, to 4 mm. diam., dense, black, shortly velvety. Mycelium closely radiating-reticulate, of dark brown hyphae 6–7μ thick, the cells mostly 15–20μ long, branching irregular, rarely opposite, at acute angles. Hyphopodia unicellular, alternate or unilateral, digitate to irregularly pulvinate, concolorous with hyphae, entire or more often with sinuous outline or sublobate, 8–12 × 5–8μ. Mycelial setae numerous, erect, opaque black, simple, obtuse, more or less straight, 2–3-septate, up to 140 × 7–9μ, the base not or scarcely swollen, the surface slightly granulose, the wall not thickened. Perithecia arising as short erect lateral branches from the mycelial hyphae, of which the terminal cell develops into the perithecium, the lower cell remaining as a short stalk; mature perithecia black, globose, up to 100μ diam., with indistinct round apical pore about 15μ diam.; the perithecial wall appears to consist of only a single layer of dark brown to almost greenish-black angular parenchyma, the cells about 15μ diam., but smaller towards the vertex, smooth on the surface, with some cells around the sides and base growing out into radiating "hyphal struts" to support the developing perithecium. No setae on the perithecia. Asci basal, formed from branching ascogenous hyphae, aparaphysate, 8–10 in each perithecium, maturing in succession and collapsing after spore discharge, broadly ovate, becoming more elongate at maturity, 8-spored, sessile, about 50 × 25μ, elongating to about 80μ. The apex of the immature ascus is thickened to 8μ, with a slight central internal canal; no definite evidence of a double-layered wall was found. Spores multiseriate to sub-parallel in the ascus, oblong with obtusely rounded ends, becoming brown, 1-septate, slightly constricted, smooth, 18–22 × 7–8μ; the upper cell distinctly shorter than the lower and subglobose, the lower cell slightly attenuate to the rounded base.

This species differs from all others in the genus in the greater number of asci in each perithecium, and also in the unequally-septate spores.

(70) MELIOLA ARUNDINIS Pat., *Journ. de Bot.*, 1897: 348.

On *Phragmites vulgaris*, Johnstone R., Queensland, 1889, S. Johnson (in Herb. National, Victoria).

(71) STIGMATEA LOMATIAE Hansf., n. sp.

Plagulae epiphyllae, usque ad 5 mm. diam., subinde confluentes, leves, in sicco luteae, leniter elevatae. Mycelium subcuticulare, brunneum, ex hyphis 5–7μ cr., cellulis usque ad 12μ longis, ramosissimis compositum, pelliculam unistratosam efformans. Haustoria nulla. Thyriothecia dispersa, rotundata, atra, levia, nitentia, subcuticularia, usque ad 150μ diam.; paries superior unistratosus, atrobrunneus, radiatus, poro centrali aperta. Paries inferior subhyalinus, tenuis, ex hyphis 2–3μ cr., intertextis compositus. Asci suberecti, centripetaliter directi, ellipsoidei, sessiles, usque ad 75 × 18μ, 8-spori. Sporae 2–3-seriatae, oblongo-clavulatae utrinque rotundatae, 1-septatae, constrictae, leves, brunnescentes, 20–22 × 8–9μ, cellula inferiore leniter angustiore.

Hab. in foliis *Lomatiae arborescentis*, Williams R., New South Wales, L. Fraser 204, p.p.

Colonies epiphyllous only, up to 5 mm. diam., or sometimes confluent, smooth, yellowish-brown when dry, possibly yellow-green when fresh, slightly raised. Mycelium subcuticular, forming a pellicle of one layer of brown hyphae 5–7μ thick, the cells up to 12μ long, much branched, the septa not thickened and not much darker than the remainder of the cell walls. No haustoria were found, nor further penetration of the host. Thyriothecia scattered, rounded, black, convex, smooth, shining, subcuticular in development, up to 150μ diam.; upper wall convex, indistinctly radiate, opening by central irregular pore, composed of cells similar to those of the mycelium; lower wall hyaline to subhyaline, thin, of interwoven hyphae 2–3μ thick, passing into the internal ground tissue. At first the loculus is filled with a loose fibrous tissue of hyaline "paraphyses" 2μ thick, amongst which the asci develop; possibly these paraphyses are also connected to the upper wall, though this could not be definitely proved from my sections. The asci are suberect, directed towards the apical pore of the thyriothecium, ripening in succession, ellipsoid, sessile, at first rather thick-walled, rounded at the apex, 8-spored, up to 75 × 18μ. Spores 2–3-seriate, oblong-clavulate, the ends obtusely rounded, 1-septate, constricted, smooth, becoming brown, 20–22 × 8–9μ, the lower cell slightly narrower than the upper.

(72) STIGMATEA ORITIDIS Hansf., n. sp.

Plagulae epiphyllae, atrae, leves, rotundatae, usque ad 1 mm. diam. vel confluentes. Mycelium subcuticulare, pelliculosum, irregulariter radiatum, ex hyphis dilute olivaceis, ramosissimis, 8–12μ cr., cellulis 5–10μ longis, subinde etiam longitudinaliter vel oblique 1-septatis, septis incrassatis, atrobrunneis, compositum. Thyriothecia laxe dispersa, rotundata, subcuticularia, levia, atra, usque ad 350μ diam., circa 100μ alt.; paries superior unistratosus, opacus, indistincte radiatus, poro irregulariter stellato centrali apertus; paries inferior hyalinus, haud radiatus, ex hyphis intertextis 2–3μ crassis compositus, tenuis. Asci versus poro thyriothecii directi, cylindracei, apice late rotundati et usque ad 6μ incrassati, 8-spori, deorsum breviter nodoso-stipitati, 60–90 × 18–21μ. Paraphyses paucae, filiformes, hyalinae, circa 70 × 2–3μ. Sporae oblique 2–3-seriatae, oblongo-ovoideae, atrobrunneae, 1-septatae, leniter constrictae, saepe 4-guttulatae, 23–27 × 8–9μ, cellula superiore leniter crassiore, episporio tenuiter punctato, haud verrucoso.

Hab. in foliis *Oritidis lancifoliae*, Bogong High Plains, Middle Creek, Victoria, Jan. 1950, leg. Mrs. Ducker.

Colonies epiphyllous, black, smooth, orbicular, up to 1 mm. diam., becoming larger by confluence. Mycelium in or under the cuticle, eventually forming a solid plate of one layer of pale olivaceous, much branched hyphae 8–12μ wide, the cells 5–10μ long, often with one longitudinal or oblique septum in the wider cells, the septa thick and black-brown. Thyriothecia subcuticular, loosely scattered, circular, smooth, black, shining, up to 350μ diam. and about 100μ high in the centre, not fimbriate around the edge; upper wall of one layer of opaque black hyphae indistinctly and irregularly radiating from the centre, with an indistinct lining of much compressed hyaline delicate cells, dehiscent by irregularly stellate fissures extending outwards from the centre, not reaching the margin, and so appearing as a rather wide irregular central pore; basal wall of hyaline, delicate, interwoven hyphae, not radiate in structure, thin. Asci fairly numerous, ripening in succession, cylindric with broadly rounded apex, which in immature asci is thickened up to 6μ, without evident interior canal, not definitely bitunicate, suddenly narrowed below into a short nodose foot, 8-spored, 60–90 × 18–21μ. A few paraphyses are present, hyaline, filiform, ? continuous, about 70 × 2–3μ. Spores irregularly and obliquely 2–3-seriate, oblong-ovoid with obtuse rounded ends, dark brown when fully mature, 1-septate, slightly constricted, often 4-guttulate, 23–27 × 8–9μ, the upper cell slightly wider than the lower; epispore finely and indistinctly punctate but not roughened.

(73) MICROTHYRIUM AMYGDALINUM Cke. & Mass., *Grevillea*, 19:90, 1890.

On leaves of *Eucalyptus* spp., South Australia and Tasmania; the original collection was made around Spencers Gulf, S. Australia. The only recent collection I have seen was made at Meningie, S. Austr., by Mr. L. D. Williams, and is preserved at the Waite Institute as WARI 3519.

Free mycelium none. Thyriothecia superficial, gregarious or scattered, black-brown, up to 180μ diam., amphigenous, circular, flattened, membranaceous, easily secedent. Upper wall of subopaque dark brown radiating hyphae 5–6μ thick, the cells 5–14μ long, not fimbriate at the margin, irregularly dehiscent or with an irregular central aperture. Lower wall pale olivaceous, of interwoven hyphae 3–4μ wide, with short cells, thin. The interior is at first filled with a loose fibrous tissue of branched, filiform, septate paraphysoids, 1–2μ thick, irregularly interwoven, arising from the lower wall and doubtfully also connected to the upper wall. Through this loose tissue a few wider hyphae (4–5μ, with cells 4–7μ long) ramify at the base, and the asci arise as erect branches from them, apparently without crozier formation. Asci up to 50 × 18μ, ellipsoid-saccate, thickened up to 7μ at the apex and with a central interior canal when immature, later the wall becoming thinner and the canal disappearing; 8-spored at first, but often only 2–4 spores mature; the base sessile or very shortly nodose-stipitate. Spores irregularly arranged, oblong-fusoid with obtuse rounded ends, hyaline, 1-septate, not or indistinctly constricted, straight, smooth, up to 18 × 6μ.

No penetration of the host leaf by this fungus has yet been found by me, but as it appears to be restricted to the host-genus *Eucalyptus*, it is probable that in some manner it is a definite parasite of the leaf.

(74) SEYNESIA MICROTHYRIOIDES (Wint.) Theiss., *Osterr. Bot. Zeitschr.*, 63:125, 1913.
= *Asterina microthyrioides* Wint., *Hedgwigia*, 25:94, 1885.

On *Eucalyptus niphophila*, Kosciusko, New South Wales, A. Costin 118, April 1947.

Thyriothecia closely scattered on indefinite brownish areas of the leaf, up to 20 mm. diam., hypophyllous. There is a subcuticular layer of hyaline mycelium covering the whole infected area, 1–2 cells thick, and connected at many points with the basal wall of the thyriothecium, directly through the cuticle by fine hyaline filaments. The outer cavities of the stomata beneath the thyriothecia are filled with dark plugs of mycelium, but these do not penetrate between the guard cells, and apparently are not connected with the subcuticular mycelium. Individual thyriothecia are rounded, up to 300μ diam. and 80–100μ high in the centre, black, smooth, flattened-conoid with a central irregular pore in the upper wall, about 20μ diam.; superficial and often confluent into small groups. There is no external free mycelium. Upper wall of thyriothecium consisting of a single layer of radiating dark brown opaque hyphae 5–6μ wide, not fimbriate at the margin, lined with an indefinite layer of hyaline compressed parenchyma, to which the "paraphyses" are connected. Lower wall of 1–3 layers of interwoven delicate hyphae, in section appearing parenchymatous, closely adpressed to the cuticle of the host leaf, passing internally in young stages into a tissue of erect, branched, septate, hyaline hyphae, of which a few remain as "paraphyses" between the maturing asci. Asci numerous, ripening in succession, at first erect, then directed towards the apical pore of the thyriothecium, wide cylindric to saccate, widely rounded and when young thickened at the apex to 5μ, subsessile, 8-spored, up to 70 × 20μ. Spores irregularly 2–3-seriate, oblong-clavulate with obtuse rounded ends, straight or slightly bent, becoming brown, 1-septate and slightly constricted, smooth, 20–23 × 7–8μ, the upper cell slightly shorter and wider than the lower.

This species was also collected at Meningie, S. Australia, by L. D. Williams, WARI 3529, on *Eucalyptus* sp.

(75) SEYNESIA BANKSIAE P. Henn., *Hedwigia* 1903: 78.

The specimen on *Banksia ornata*, Kuitpo, S. Australia, collected by Samuel and mentioned in *Trans. Roy. Soc. S. Australia*, 46:175, 1922, has been re-examined.

Beneath the colonies there is a subcuticular mycelium of hyaline, septate, much branched hyphae, connected to the basal wall of the superficial thyriothecia at many points directly through the cuticle by fine filaments, and at other points penetrating through the cuticle by similar filaments, enlarging above the cuticle into single brown stellate cells or into groups of these. Around some colonies in this collection there are a few superficial brown hyphae extending outwards over the leaf, up to 100μ long, septate, little and irregularly branched, and these hyphae bear alternate or unilateral hyphopodia, which are globose to hemispheric, entire, 5–10 × 5μ. An extreme example of the development of this mycelial development is shown by a collection made by C. T. White, in Feb. 1909 on *Banksia latifolia*, Moreton Island, Queensland, now in the Queensland Herb.; until Samuel's collection had been examined in detail, I had provisionally determined the Queensland specimen as a new species "*Asterina banksiae*".

Here the colonies are epiphyllous, thin, effuse and confluent, smooth. Mycelium of substraight, brown, main hyphae with cells 20–45 × 3·5–4·5μ, bearing alternate or unilateral hyphopodia, and with numerous wavy to very crooked, irregularly branched, often fasciculate, secondary hyphae without hyphopodia. These secondary hyphae are very irregular, concolorous or slightly paler than the main hyphae, indistinctly septate, 2·5–4·5μ wide, forming a rather close, patchy reticulum. Hyphopodia continuous, subglobose to ovate, sessile, entire, 5–8 × 5μ. Thyriothecia few, loosely scattered, circular, convex, black, up to 170μ diam., not fimbriate at the margin; upper wall subopaque black-brown, composed of radiating hyphae 3·5–4·5μ wide, the cells up to 12μ long, splitting radiately to the margin at maturity into a few widely triangular segments, the fissures originating from a central irregular pore about 30μ diam. Lower wall indistinct, subhyaline, not radiate, very thin. Asci rather few, apparently aparaphysate, subglobose to widely ellipsoid, sessile or very shortly nodose-stipitate, 8-spored, 30–40 × 20–28μ. Spores conglobate, oblong with rounded ends, 1-septate, slightly constricted, smooth, 13–16 × 6–7μ, the cells subequal. Germination is by formation of a hyphopodium near one end, followed by mycelial growth from the same or from the opposite cell.

I am unable to distinguish generically between these two specimens, which in my opinion rightly belong to the genus *Asterina*, but still have to re-examine authentic collections of *Seynesia banksiae* P. Henn., before it can be definitely stated that this is identical.

(76) THALLOCHAETE BAILEYI (B. & Br.) Hansf., comb. n.

= *Asterina baileyi* B. & Br. = *Asterella hakeae* McAlpine.

Colonies on leaves of *Hakea* spp., rounded to elongate, black, at first thin, but becoming dense and very shortly velvety. External mycelium of flexuous dark brown hyphae 5–7μ thick, the cells 10–30μ long, very irregularly branched and forming minute knots and tufts, which later coalesce; hyphopodia none. Mycelial setae more or less erect, straight or bent, simple, obtuse, dark brown, septate, up to 70 × 5–7μ, the basal cell slightly inflated, densely scattered on the external hyphae in most collections, though in others scant or even absent, especially in young colonies. The surface mycelium is connected at short intervals to other hyaline or pale brown hyphae within the cuticle, often in two or three indefinite layers, the outermost about 15–20μ deep within the cuticle, and the innermost in close contact with the cells of the epidermis, mostly running along the grooves between these cells, not penetrating deeper within the leaf and not forming haustoria. The outermost inflated stomatal cavity is often filled with dark plugs of mycelium, which may connect directly with the intracuticular hyphae, but do not penetrate down to, or between, the guard cells.

Thyriothecia closely scattered, and later often becoming confluent at the edges, black, circular in outline, glabrous or sometimes partially covered with mycelial hyphae bearing setae, up to 280μ diam., in maturity about 90μ high in the centre; the upper wall opaque dark brown, the outer layer of radiating hyphae 4–6μ wide, with cells up to 15μ long, not fimbriate at the margin, with 2–4 inner layers of thin-walled, paler cells, much compressed and connected internally to the loose fibrous tissue of "paraphyses", which at full maturity break from this upper connection by gelatinization, and thus become free filaments. The upper wall is dehiscent by an irregular, somewhat stellate central aperture. Lower wall of thyriothecium hyaline or subhyaline, of loosely interwoven hyphae 1½–2μ thick, somewhat gelatinous, closely adpressed to the host cuticle. Asci basal, developing singly in succession and forcing their way through the loose tissue of paraphyses towards the central aperture of the upper wall, broad cylindric, becoming ovate, subsessile, up to 55 × 30μ, thin-walled, 8-spored. Spores conglobate, oblong-clavulate with rounded ends, dark brown with transverse lighter band on each cell, 1-septate, constricted, smooth, 20–24 × 10–12μ, the upper cell broader than the lower and subglobose. Paraphyses filiform, septate, hyaline, sometimes furcate, apparently formed from the "ground tissue" of the thyriothecium.

On *Hakea dactyloides*, Sydney, 1869, leg. Maiden (type of *Asterella hakeae* McAlp.), in Herb. Dept. Agric., Victoria; on *Hakea leucoptera*, Ooldea, Aug. 1922, T. G. Osborn; on *H. vittata*, Port Lincoln, July 1952, N. T. Flentje; on *H. elliptica*, King George's Sound, W. Australia, Morrison 34, Dec. 1898, in Herb. Kew; on *Hakea* spp., Bellair National Park, S. Australia, L. D. Williams, J. Brown, etc., in Herb. Waite Institute.

This fungus appears to be widely distributed in Australia and fairly common on species of *Hakea*. Under a lens there is considerable diversity in colony appearance between the collections included above, but I am unable to separate them into species or even varieties.

(77) LEMBOSIOPSIS AUSTRALIENSE Hansf., n. sp.

Maculae amphigenae, usque ad 10 mm. diam. vel confluentes, margine zono atro- vel rufo-brunneo, 1–1½ mm. cr. circumdatae, centro griseo-brunneae, subzonatae, epidermide folii per fissa irregulares disrumpente. Mycelium internum ex hyphis dilute brunneis, ramosis, septatis, intercellularibus, 3μ cr. compositum, mesophyllum totum penetrans, haustoria nulla. Mycelium externum nullum. Thyriothecia superficialia, saepius irregulariter circinatim disposita, vel dispersa, atra, linearia vel X-Y-formia, usque ad 1000 × 100–150μ, convexa, levia, longitudinaliter dehiscentia, demum late aperta; paries superior opace niger, ex hyphis radianto-parallelibus, 3–4μ crassis compositus, margine leniter fimbriatus; paries inferior subopace atrobrunneus, circa 30μ cr., ex hyphis intertextis compositus, intus in subhymenio pallidiore transeuns. Asci numerosi, erecti, clavati, circa 40 × 10–12μ, sursum late rotundati, subsessiles, 8-spori. Sporae 2–3-seriatae, parallelae, oblongae utrinque rotundatae, 1-septatae, lenissime constrictae, hyalinae, leves, 10–13 × 3·5–4·5μ, cellulis subaequalibus. Paraphyses numerosae, filiformes, simplices, 1μ cr., ascos leniter superantes et epithecium tenuum viridum formantes.

Hab. in foliis *Eucalypti cosmophyllae*, Cape Jervis Peninsula, South Australia, Jan. 1924, WARI 2070, leg. G. Samuel (typus); in foliis *E. marginatae*, Kuitpo, S. Australia, G. Samuel; in foliis *E.* spec. indet., Cape Jervis Peninsula, WARI 2067, leg. G. Samuel; Aldgate, S. Australia, Oct. 1912, WARI 2097, leg. T. G. Osborn.

Leafspots amphigenous, on either side of the leaf or penetrating through to both surfaces, up to 10 mm. diam. or confluent and irregular, surrounded by a dark red-brown marginal zone 1–1·5 mm. wide, the centre dark greyish-brown and somewhat zonate, with one or two broken rings of black thyriothecia, and the epidermis soon breaking up by irregular fissures. The mycelium penetrates the whole mesophyll of the older spots, but is more limited when these are restricted to one side of the leaf; hyphae brownish, septate, intercellular, about 3μ thick, much branched, very difficult to observe by reason of the discoloured dead host cells filled with red-brown amorphous matter. There is no superficial mycelium, apart from the very slightly fimbriate margins of the thyriothecia, thus differing from *L. eucalyptina* Petr. & Syd., which occurs on *Eucalyptus* spp. in South Africa. The internal mycelium passes out between the epidermal cells, and may in places form a slight subcuticular aggregation, or this may be absent, the hyphae then passing direct through the cuticle to contact with the superficial thyriothecia at several points in their lower surfaces. Thyriothecia usually irregularly circinate, with one or two broken rings on each leafspot, or sometimes irregularly scattered towards the centre of the spot, linear, straight or bent, or X- or Y-shaped, up to 1000 × 100–150μ convex, black, smooth, longitudinally dehiscent by a wide cleft. Upper wall opaque black, of radiating-parallel hyphae 3–4μ thick, the margin slightly fimbriate; lower wall opaque dark brown, about 30μ thick below the loculus, of interwoven dark hyphae, passing above into a lighter subhymenial layer. Asci numerous, erect, clavate, about 40 × 10–13μ, broadly rounded above, tapering to a subsessile base, 8-spored. Spores 2–3-seriate and parallel, oblong, rounded at both ends, 1-septate in middle and sometimes very slightly constricted, hyaline, smooth, 10–13 × 3½–4½μ, the cells approximately equal. Paraphyses numerous, filiform, simple, about 1μ thick, slightly exceeding the asci and forming a thin greenish epithecium.

The main point of difference from *L. eucalyptina* Petr. & Syd. is the absence of any external mycelium; no conidial stage was found.

(78) ASTEROLIBERTIA CRYPTOCARYAE (Cooke) Hansf., n. comb.

= *Asterina cryptocaryae* Cooke in Herb. Kew. = *Asterinella cryptocaryae* (Cooke) Theiss., *Broteria*, 10:107, 1912. = *Prilleuxina cryptocaryae* (Cooke) Ryan, *Illinois Biol. Monogr.*, 17:79, 1939.

On *Cryptocarya meissneri*, Comboyne, New South Wales, L. Fraser, Jan. 1935.

Colonies amphigenous, very thin and scarcely visible, up to 5 mm. diam., smooth. Mycelium of substraight or finely sinuous, dark brown hyphae 4–5μ thick, the cells 15–25μ long, sparingly and irregularly branched, very loosely reticulate, quite superficial and devoid of hyphopodia or of specialized "node cells", but some cells forming epidermal haustoria and marked with minute pores in their lower surface next the leaf, where the filament penetrating into the cuticle is attached. Thyriothecia loosely scattered, circular, flattened convex, up to 300μ diam., black, smooth; margin crenate, not fimbriate; the upper wall of radiating dark brown hyphae with cells 8–12 × 4μ, splitting radiately at maturity and the centre falling away. Lower wall indistinct, hyaline, passing into the fibrous internal tissue of branched, hyaline, much interwoven hyphae 3μ thick, simulating paraphyses. Asci fairly numerous, ripening in succession, borne as lateral branches of ascogenous hyphae ramifying through the internal fibrous tissue, erect, wide ellipsoid, broadly rounded at the apex, suddenly contracted below into a short, wide stipe, which is often bent or almost lateral, 8-spored, aparaphysate, up to 100 × 35μ. Spores multiseriate, more or less parallel, clavulate-oblong with obtusely rounded ends, 1-septate, slightly constricted, smooth, becoming uniformly dark brown, 25–32 × 11–13μ, the lower cell slightly smaller than the upper. Germination occurs at the base of the lower cell, direct into mycelial hyphae, the first cell formed producing a haustorium in the epidermis. No conidial stage found.

(79) ASTEROLIBERTIA CRYPTOCARYAE var. NODULIFERA Hansf., n. var.

Plagulae plerumque epiphyllae, tenues, usque ad 3 mm. diam. vel late confluentes, leves. Mycelium ex hyphis atrobrunneis, 4–5μ cr., cellulis 15–20μ longis, opposite acuteque ramosis, laxe reticulatis compositum. Hyphopodia intercalaria, saepe cellulis mycelii regulariter alternantia, tumulos globosos minutos sub hyphis mycelii efformantia, 8–10μ diam. Thyriothecia laxe dispersa, atra, rotundata, usque ad 400μ diam., margine crenata, haud fimbriata; parietes et structura interior illis typi consimiles. Sporae atrobrunneae, oblongo-clavulatae utrinque rotundatae, leves, 1-septatae, leniter constrictae, 30–36 × 11–14μ.

Hab. in foliis *Cryptocaryae rigidae*, Bulga, New South Wales, L. Fraser 61 (typus); in foliis *C. patentinervis*, Williams, R., N.S.W., L. Fraser, April 1952.

Colonies mainly epiphyllous, thin, to 3 mm. diam. or confluent over the leaf, smooth. Mycelium of substraight dark brown hyphae 4–5μ thick, the cells mostly 15–20μ long, branching usually opposite at rather acute angles, loosely reticulate. Hyphopodia intercalary, often regularly alternating with normal mycelial cells, appearing as a globose swelling on the lower side of the parent cell and not cut off by a septum, 8–10μ diam. Thyriothecia loosely scattered, black, circular, up to 400μ diam., the margin crenate, not fimbriate; upper wall convex, of dark brown radiating hyphae, the cells up to 15 × 4–5μ, dehiscent by a central irregular pore about 20μ diam., from which a few

stellate fissures later radiate, the centre finally secedent. Lower wall indistinct, hyaline, passing into a loose tissue of branched hyaline hyphae filling the interior, in which the asci are formed, and which degenerates at maturity. Asci widely ovate, sessile, 8-spored, aparaphysate, up to 100 × 45μ, ripening in succession. Spores multiseriate and somewhat parallel in ascus, becoming dark brown and sometimes with a transverse lighter band around one or both cells, smooth, oblong-clavulate, the ends obtusely rounded, 1-septate, slightly constricted, 30–36 × 11–14μ. Germination is by the formation of a hyphopodium at the basal end of the spore, then by lateral growth of mycelium from this cell.

The most obvious difference from the type is in the appearance of the hyphopodia.

(80) ASTERINA FIELDIAE Hansf., n. sp.

Plagulae epiphyllae, tenuissimae, usque ad 2 mm. diam., leves. Mycelium ex hyphis undulatis vel flexuosis, brunneis, 3–4μ crassis, indistincte septatis, laxe reticulatis radiantibus compositum. Hyphopodia alternata vel unilateralia, continua, coralloideo-pulvinata, 6–10μ diam. Thyriothecia laxe dispersa, atrobrunnea, convexa, usque ad 100μ diam., subinde 2-connata, margine haud fimbriata; paries superior radiatus, atrobrunneus, cellulis 4–8 × 4μ, in segmentis angustis stellatim dehiscens. Asci pauci, aparaphysati, globosi vel ellipsoidei, 8-spori, sessiles, 22–28 × 20–25μ. Sporae brunnescentes, oblongae utrinque rotundatae, 1-septatae, fortiter constrictae, cellulis subglobosis, subaequalibus, episporio levi vel subtiliter granuloso, 12–15 × 7–8μ. Conidia non visa.

Hab. in foliis *Fieldiae australis*, Mt. Wilson, New South Wales, June 1932, L. Fraser 5 (typus); Blackheath, N.S.W., June 1935, L. Fraser 210.

Colonies epiphyllous, mixed with those of *Irenopsis fieldiae* Hansf., very thin, up to 1 mm. diam. Mycelium of wavy to crooked brown hyphae 3–4μ thick, indistinctly septate, irregularly branched, loosely radiating-reticulate. Hyphopodia alternate or unilateral, continuous, coralloid to pulvinate with wavy outline, 6–10μ diam. Thyriothecia loosely scattered, dark brown, convex, up to 100μ diam., usually separate but sometimes 2-connate, not fimbriate at the margin; upper wall of radiating dark brown hyphae with cells 4–8 × 4μ, splitting radiately at maturity into narrowly triangular segments to the margin. Asci few, aparaphysate, globose to ellipsoid, 8-spored, sessile, 22–28 × 20–25μ. Spores conglobate, becoming brown, oblong with broadly rounded ends, 1-septate and rather deeply constricted, the cells subglobose and equal, the surface from nearly smooth to finely granulose, 12–15 × 7–8μ. The lower wall of the ascoma is hyaline, of indistinct structure. Pycnidia and pycnospores not seen.

(81) ASTERINA CLEMATIDIS Hansf., n. sp.

Plagulae amphigenae, usque ad 0·5 mm. diam., saepius numerosae et confluentes, subdensae, leves. Mycelium ex hyphis flexuosis, brunneis, 3·5–5μ cr., cellulis 15–20μ longis, opposite vel irregulariter ramosis, subdense reticulatis compositum. Hyphopodia alternata vel opposita, 1-septata, 9–12μ longa, recta vel curvata, cellula basali cylindracea, 2–4μ longa, cellula apicali subglobosa vel anguloso-sublobata, apice saepe truncata, 8–9 × 4–8μ. Thyriothecia subaggregata, rotundata, nigra, convexa, levia, usque ad 100μ diam.; paries superior radiatus, atrobrunneus, cellulis 5–10 × 3–4μ, margine crenatus vel leniter fimbriatus; paries inferior hyalinus, indistinctus; in maturitate prope marginem in segmentis angustis stellatim dehiscentia. Asci circa 8, aparaphysati, globosi vel ovati, sessiles, 8-spori, circa 30 × 20–25μ. Sporae conglobatae, atrobrunneae, oblongae utrinque obtusae, 1-septatae, leves, 15–17 × 7–8μ, cellulis aequalibus.

Pycnidia thyriotheciis consimilia; pycnosporae subglobosae vel piriformes, atrobrunneae, transverse hyalino-zonatae, leves, 13–15 × 7–9μ.

Hab. in foliis *Clematidis glycinoidis*, National Park, New South Wales, L. Fraser 27 (typus), 176.

Colonies amphigenous, minute, to 0·5 mm. diam., usually numerous and widely confluent, rather dense, smooth. Mycelium of flexuous brown hyphae, 3·5–5μ thick, the cells mostly 15–20μ long, branching opposite or alternate, rather closely reticulate-radiating. Hyphopodia alternate or opposite, 2-celled, 9–12μ long, straight or bent;

stalk cell cylindric, 2–4μ long; head cell from subglobose to angulose or sublobate, often truncate at the apex, 8–9 × 4–8μ. Thyriothecia closely scattered but usually separate, circular, black, convex, smooth, up to 100μ diam., the margin crenate or slightly fimbriate; upper wall of dark brown radiating hyphae, the cells 5–10 × 3–4μ, dehiscent by numerous radiate fissures nearly to the margin into narrow triangular segments. Asci about 6–8, aparaphysate, globose to widely ovate, sessile, 8-spored, about 30 × 20–25μ. Spores conglobate, dark brown, oblong with obtusely rounded ends, 1-septate and constricted in the middle, the cells equal and subglobose, smooth, 15–17 × 7–8μ.

Pycnidia similar to the thyriothecia; pycnospores subglobose to piriform, dark brown with transverse median subhyaline band, from which germination occurs, smooth, 13–15 × 7–9μ.

(82) ASTERINA DENSA Syd. var. AUSTRALIENSIS Hansf., n. var.

Plagulae hypophyllae, tenues vel densae, usque ad 5 mm. diam., saepe late confluentes. Mycelium ex hyphis atrobrunneis, subrectis vel flexuosis, 4–5μ cr., cellulis plerumque 20–30μ longis, irregulariter ramosis, reticulatis compositum. Hyphopodia alternata vel laxe dispersa, haud opposita, breviter digitata integraque vel irregulariter sinuoso-curvata, rarius lobata, versiformia, 6–13 × 4–9μ, continua, rarius in ramulis mycelii terminalia. Thyriothecia subaggregata, plerumque discreta, rotundata, usque ad 200μ diam., nigra, convexa, levia, margine haud vel leniter fimbriata, hyphis fimbriarum usque ad 60μ longis, tortuoso-radiantibus; paries superior radiatus, atrobrunneus, cellulis 4–12 × 4μ, in maturitate stellatim ad marginem dehiscens et parte centrali secedente; paries inferior dilute brunneus vel subhyalinus, radiatus, tenuis. Asci circa 6, aparaphysati, globosi vel late ovati, sessiles, 4–8-spori, 40–50μ diam. Sporae conglobatae, oblongae utrinque rotundatae, 1-septatae, fortiter constrictae, 23–28 × 12–14μ, cellula superiore crassiore, subglobosa, episporio sublevi vel dense subtiliter verruculoso. Pycnidia non visa.

Hab. in foliis *Pittospori undulati*, Mt. Warning, New South Wales, L. Fraser 231 (typus); Williams R., N.S.W., L. Fraser 78; Cambewarra Mt., N.S.W., Rodway, Dec. 1934.

Colonies hypophyllous, thin, becoming dense, up to 5 mm. diam., often widely confluent. Mycelium of dark brown, substraight to crooked hyphae 4–5μ thick, the cells mostly 20–30μ long, irregularly branched, becoming closely reticulate. Hyphopodia alternate or more scattered, not opposite, continuous, from short digitate and entire to irregularly sinuous-bent or lobed, versiform, 6–13 × 5–9μ, rarely formed at the ends of short mycelial branches. Thyriothecia closely scattered but usually separate, roughly circular, up to 200μ diam., black, convex, smooth, the margin not, or slightly fimbriate and then the fringing hyphae tortuous-radiating, up to 60μ long. Upper wall of radiating dark brown hyphae with cells 4–12 × 4μ, splitting radiately to the margin into triangular segments and the central parts soon secedent. Lower wall of pale brownish to subhyaline radiating hyphae, irregular, thin. Asci about 6, aparaphysate, ripening in succession, globose to oblong, 4–8-spored, about 40–50μ diam. Spores conglobate, oblong with obtusely rounded ends, 1-septate and rather deeply constricted, the upper cell usually subglobose and slightly wider than the lower, surface from nearly smooth to closely and finely verruculose, 23–28 × 12–14μ, the lower cell 10–12μ wide. Pycnidia not seen.

(83) ASTERINA DICTYOLOMATIS P. Henn., *Hedwigia* 43:372, 1904.

On *Evodia micrococca*, Williams R., New South Wales, L. Fraser 211.

Colonies epiphyllous, rarely hypophyllous and then small, up to 3 mm. diam. or numerous and widely confluent, thin, smooth. Mycelium of substraight to flexuous brown hyphae 4–5μ thick, the cells mostly 15–20μ long, branching opposite or irregular, loosely reticulate. Hyphopodia alternate or unilateral, short digitate or slightly lobate, continuous, straight or bent, rounded at apex, 6–10 × 5–8μ. Thyriothecia numerous, closely scattered, rounded, black, convex, up to 140μ diam., the margin loosely fimbriate with the fringing hyphae tortuous-radiating, up to 100μ long; upper wall almost hemispheric, dark brown, of radiating hyphae with cells 4–12 × 4μ, at maturity radiate-dehiscent almost to the margin into narrow triangular segments; lower wall of subhyaline, indistinctly radiating, rather loose hyphae. Asci aparaphysate, globose to widely ovate, sessile, 8-spored, up to 40μ diam., maturing in succession and filling the cavity of the thyriothecium. Spores conglobate, becoming dark brown, oblong with obtuse ends, 1-septate, rather deeply constricted, the cells equal and subglobose, or the upper very slightly wider than the lower, epispore smooth or very finely and closely granulose to verruculose, 18–22 × 9–10μ. Pycnidia and pycnospores not seen.

(84) Asterina doryphorae Hansf., n. sp.

Plagulae amphigenae, usque ad 5 mm. diam., vel effusae et late confluentes, tenues, leves. Mycelium ex hyphis subrectis vel flexuosis, atrobrunneis, 6–7μ cr., cellulis plerumque circa 16μ longis, irregulariter ramosis, reticulatis compositum. Hyphopodia alternata, unilateralia vel rarius opposita, continua, hemisphaerica, integra, 8–10μ diam. Thyriothecia dispersa, atra, convexa, levia, rotundata, haud fimbriata, usque ad 260μ diam.; paries superior ex hyphis sinuosi-radiantibus, pellucide atrobrunneis compositus, cellulis 5–12 × 4–6μ, mox stellatim prope marginem dehiscens; paries inferior hyalinus, ex hyphis tortuoso-radiantibus, 3–5μ cr. compositus, compressus et cuticulam folii adhaerens. Asci numerosi, in ordine maturescentes, subglobosi, sessiles, 4–8-spori, usque ad 60 × 40μ; paraphyses numerosae, hyalinae, filiformes, obsolete septatae et ramosae, mucoso-diffluentes. Sporae conglobatae, oblongae utrinque obtuse rotundatae, 1-septatae, constrictae, dilute brunneae, leves, 30–33 × 14–16μ, cellulis subaequalibus.

Hab. in foliis *Doryphorae sassafratis*, National Park, New South Wales, L. Fraser 26 (typus); Clyde Mtn., N.S.W., L. Fraser 180.

Colonies amphigenous, up to 5 mm. diam. or effuse and widely confluent over the leaf, thin, smooth, becoming denser. Mycelium of substraight to flexuous dark brown hyphae 6–7μ thick, the cells mostly about 15μ long, branching irregular, becoming closely reticulate. Hyphopodia alternate, unilateral or rarely opposite, hemispheric, entire, 1-celled, 8–10μ diam. Thyriothecia scattered, black, convex, smooth, more or less circular in outline, not fimbriate at margin, up to 260μ diam.; upper wall of translucent dark brown radiating-wavy hyphae with cells 5–12 × 4–6μ, early splitting by radiate fissures into many narrow triangular segments nearly to the margin, and exposing the internal tissue of asci and paraphyses; lower wall hyaline, of tortuous hyphae 3–5μ thick, flattened and adherent to the host cuticle. Asci numerous, ripening in succession, subglobose, sessile, 4–8-spored, up to 60 × 40μ; paraphyses numerous, hyaline, filiform, indistinctly septate and branched, becoming mucose. Ascus wall at first thickened, without evident apical canal. Spores conglobate, oblong with rounded ends, 1-septate, constricted, pale brown, smooth, 30–33 × 14–16μ, the cells subequal or the upper slightly larger. In germination the spore forms a hyphopodium at one end, and the opposite cell collapses, while the germinating cell becomes dark brown. The mycelium is closely similar to that of *Clypeolella* and *Schiffnerula*, but no trace of mycelial conidia was found.

(85) Asterina drimidicola Hansf., n. sp.

Plagulae plerumque hypophyllae, tenues, usque ad 5 mm. diam. vel effusae et confluentes, leves. Mycelium ex hyphis brunneis, subrectis vel flexuosis, 4·5–5·5μ cr., cellulis plerumque 20–30μ longis, irregulariter ramosis, laxe reticulatis compositum. Hyphopodia alternata, opposita vel dispersa, continua, breviter digitata vel sublobata, 7–10 × 6–8μ. Thyriothecia dispersa, atra, suborbiculata, usque ad 200μ diam., subinde 2-connata; paries superior atrobrunneus, radiatus, cellulis 4–10 × 4μ, stellatim prope marginem dehiscens et parte centrali secedente; paries inferior indistinctus, hyalinus. Asci circa 6, aparaphysati, ovati vel subglobosi, sessiles, 8-spori, usque ad 60 × 35–40μ. Sporae conglobatae, oblongae utrinque rotundatae, 1-septatae, constrictae, opace atrobrunneae, leves, 26–29 × 14–15μ, cellulis aequalibus. Conidia nulla.

Hab. in foliis *Drimidis insipidae*, Hastings R., New South Wales, L. Fraser, April 1952.

Colonies mostly hypophyllous, thin, to 5 mm. diam. or effuse and widely confluent, smooth. Mycelium of substraight to flexuous dark brown hyphae 4·5–5·5μ thick, the cells mostly 20–30μ long, branching irregular, loosely reticulate. Hyphopodia alternate, opposite or scattered, continuous, short digitate or sublobate, 7–10 × 6–8μ. Thyriothecia scattered, black, convex, circular, the margin crenate, not fimbriate, up to 200μ diam., sometimes 2-connate at the edges; upper wall dark brown, of radiating hyphae with cells 4–10 × 4μ, stellate-dehiscent to the margin into broad triangular segments, the centre soon secedent. Lower wall indistinct, hyaline. Asci about 6, apparently aparaphysate, ovate to subglobose, sessile, 8-spored, up to 60 × 35–40μ. Spores conglobate, oblong with rounded ends, 1-septate, constricted, opaque dark brown, smooth, 26–29 × 14–15μ, the cells equal. No conidia seen.

(86) ASTERINA KNYSNAE Doidge, var. AUSTRALIENSIS Hansf., n. var.

Plagulae epiphyllae, usque ad 4 mm. diam., densae, leves, facile secedentes et maculas luteas relinquentes. Mycelium ex hyphis subrectis atrobrunneis, 6–7μ cr., cellulis plerumque 15–20μ longis, irregulariter ramosis, primo laxe reticulatis, compositum, demum subsolidum. Hyphopodia alternata, unilateralia vel circa 5% opposita, plerumque leniter antrorsa, continua, ellipsoidea vel subglobosa, integra, 7–12 × 6–8μ. Thyriothecia subaggregata, rotundata, atra, convexa, levia, usque ad 200μ diam., subinde 2-connata et elliptica; paries superior atrobrunneus, radiatus, cellulis 5–12 × 4–6μ, margine in laminis hypharum tortuoso-radiantibus extensus, haud fimbriatus; paries inferior subhyalinus vel dilute brunneus, ex hyphis tortuosis 2–3μ cr., septatis, compositus, haud radiatus. Thyriothecia stellatim dehiscentia. Asci subglobosi vel late ovati, aparaphysati, pauci, 8-spori, usque ad 60 × 40μ, sessiles. Sporae multiseriatae vel conglobatae, opace atrobrunneae, oblongae utrinque obtusae, 1-septatae, constrictae, 28–35 × 14–15μ, cellulis aequalibus, subglobosis, episporio subtiliter denseque granuloso. Conidia nulla.

Hab. in foliis *Canthii coprosmoidis*, Hastings R., New South Wales, L. Fraser, April 1952.

Colonies epiphyllous, to 4 mm. diam., dense, smooth, easily secedent and leaving a pale brown leafspot. Mycelium of substraight dark brown hyphae 6–7μ thick, the cells mostly 15–20μ long, branching irregular, forming at first a loose network of hyphae, which becomes almost solid in mature colonies by further branching and by development of thyriothecia. Hyphopodia alternate, unilateral or about 5% opposite, often slightly antrorse, continuous, short ellipsoid to subglobose, entire, 7–12 × 6–8μ. Thyriothecia at first closely scattered, rounded, black, convex, smooth, up to 200μ diam., soon extending to form a continuous sheet beneath the mycelium, sometimes 2-connate and then elliptic; upper wall of substraight dark brown radiating hyphae 4–6μ thick, the cells 5–12μ long, passing at the margin into sheets of tortuous-radiating hyphae, not fimbriate. Lower wall of tortuous pale brown to subhyaline hyphae 2–3μ thick, septate, not radiate. Young thyriothecia are filled with a loose tissue of much branched, septate, hyaline hyphae, amongst which the few asci develop. Asci subglobose to wide ovate, aparaphysate, 8-spored, up to 60 × 40μ, at first thickened to 6μ around the widely rounded apex, sessile. Spores multiseriate or conglobate, opaque dark brown, oblong, obtuse, 1-septate, constricted, 28–35 × 14–15μ, the cells equal and subglobose, epispore finely and closely granulose. Conidia not seen. The thyriothecia are dehiscent by stellate fractures, the central parts falling away.

(87) ASTERINA ORITIS Hansf., n. sp.

Plagulae hypophyllae, usque ad 4 mm. diam., tenues, aegre perspicues, leves. Mycelium ex hyphis brunneis, flexuosis, 4μ cr., cellulis circa 25μ longis, irregulariter ramosis, laxe reticulatis compositum. Hyphopodia alternata vel dispersa, digitata, apice rotundata, plus minusve sinuoso-curvata, integra, 8–13 × 5–6μ. Thyriothecia laxe dispersa, atra, convexa, orbiculata, usque ad 200μ diam., margine leniter fimbriata, hyphis fimbriarum tortuoso-radiantibus usque ad 50μ longis. Paries superior atrobrunneus, radiatus, cellulis 5–12 × 4μ, stellatim dehiscens et parte centrali secedente.

Paries inferior viridulus, ex hyphis sinuoso-radiantibus 2·5–3·5μ cr. compositus. Asci usque ad 15, in ordine maturescentes, aparaphysati, in massa fibrosa hyalina immersi, erecti, late ellipsoidei, sessiles, usque ad 60 × 30μ, 8-spori. Sporae conglobatae, atrobrunneae, ellipsoideae utrinque obtuse rotundatae, 1-septatae, leves, 20–24 × 10–12μ, cellula inferiore distincte minore. Conidia non visa.

Hab. in foliis *Oritis excelsae*, Williams R., New South Wales, May 1953, L. Fraser 109.

Colonies hypophyllous, to 4 mm. diam., very thin and scarcely visible, smooth. Mycelium of flexuous to crooked brown hyphae 4μ thick, the cells about 25μ long, branching irregular, loosely reticulate. Hyphopodia alternate, unilateral or scattered, digitate with rounded apex, more or less sinuous-bent, continuous, 8–13 × 5–6μ. Thyriothecia loosely scattered, black, convex, circular, up to 200μ diam., the margin slightly fimbriate, the fringing hyphae tortuous-radiating, up to 50μ long; upper wall of dark brown radiating hyphae, the cells up to 12 × 4μ, at maturity stellate-dehiscent into broad triangular segments and finally the centre falling away; lower wall greenish hyaline, of wavy radiating hyphae 2·5–3·5μ wide. Asci up to 15, ripening in succession, embedded in an indistinctly fibrous tissue of hyaline hyphae, without distinct paraphyses, erect, broadly ellipsoid, sessile, up to 60 × 30μ, 8-spored. Spores conglobate, becoming dark brown, ellipsoid with obtuse ends, 1-septate below the middle, smooth, 20–24 × 10–12μ, the lower cell distinctly smaller than the upper. Germination not observed. No pycnidial stage seen.

(88) ASTERINA CINNAMOMICOLA Hansf., *Proc. Linn. Soc. London*, 157:202, 1945.

On *Cinnamomum* sp., Russell R., NSW., 1892, Von Mueller, in Herb. National, Victoria.

This specimen corresponds closely to the type, described on *Cinnamomum* from Ceylon.

(89) ASTERINA SP.

On *Veronica derwentia*, Kinglake, Victoria, 1930, leg. D. Dixon.

Colonies epiphyllous, black, thin, smooth, confluent over the whole leaf. Mycelium of brown hyphae 4–6μ thick, undulate to irregularly flexuous, septate at intervals of 20–30μ, branching irregular, forming a loose network of wavy-polygonal meshes. Hyphopodia alternate or unilateral, from pulvinate to elongate digitate, more or less lobed and irregularly bent forwards or backwards, rarely with a stalk cell, 8–12 × 6–9μ. Setae none. Thyriothecia closely scattered, numerous, more or less filling the meshes of the mycelium towards the centre of the colony, commencing as a radiate plate of brown hyphae about 5μ thick, the cells towards the centre nearly cubical, those of the margin up to 15μ long, margin crenate, not fimbriate; mature thyriothecia up to 85μ diam., irregularly circular in outline, subopaque; basal membrane indistinct, hyaline; upper wall opaque dark brown, irregularly dehiscent and the remains becoming more or less erect around the asci, which are embedded in mucus derived from the hyaline "paraphysoids". Asci 3–8, subglobose, 8-spored, 25–30μ diam. Spores conglobate, oblong with rounded ends, brown, smooth, 1-septate, constricted, the cells nearly equal or sometimes the lower slightly longer and narrower, 12–15 × 5–7μ. Pycnidia similar to the thyriothecia, stellate-dehiscent, rather few. Conidia oblong with rounded apex, very slightly apiculate at the base, continuous, dark brown, smooth, 12–16 × 7–8μ, with a transverse median hyaline band.

Several species of *Asterina* have been described on *Veronica* spp. in the past, from various parts of the world, and until this Australian specimen can be compared with authentic material of these, it seems best not to give it a specific name.

(90) LEMBOSIA NOTELAEAE Hansf., n. sp.

Plagulae plerumque epiphyllae, tenues, atrae, usque ad 4 mm. diam. Mycelium ex hyphis brunneis, subrectis vel flexuosis, 2–4μ cr., obsolete septatis, irregulariter ramosis, subdense reticulatis compositum. Hyphopodia in hyphis primariis efformantia, tenuiter dispersa, alternata vel unilateralia, hemisphaerica vel pulvinata, continua, 4–7 × 6–8μ.

Thyriothecia in centro plagularum aggregata, linearia, usque ad 700 × 150μ, saepe confluentes et subinde Y-formia, atra, convexa, levia, margine irregulariter crenata, haud fimbriata; paries superior opace atrobrunneus, ex hyphis radiantibus 3–4μ cr. compositus, in maturitate longitudinaliter rimosus; paries inferior hyalinus, fibrosus, tenuissimus et in texto centrali hypharum hyalinarum transeuns. Asci numerosi, erecti, sessiles, late ellipsoidei, usque ad 40 × 20μ, 8-spori, aparaphysati. Sporae conglobatae, brunnescentes, oblongae utrinque obtuse rotundatae, 1-septatae, leniter constrictae, leves, 13–14 × 5–7μ, cellulis aequalibus. Conidia nulla.

Hab. in foliis *Notelaeae venosae*, National Park, New South Wales, L. Fraser, 13D (typus); in foliis *N. reticulatae*, Church Point, N.S.W., L. Fraser, Aug. 1934.

Colonies mostly epiphyllous, scattered, thin, black, up to 4 mm. diam., with central group of thyriothecia. Mycelium of brown hyphae 2–4μ thick, the secondary hyphae paler, indistinctly septate, substraight to very crooked, closely reticulate. Hyphopodia mostly on the main, darker hyphae, alternate or thinly scattered, continuous, hemispheric to irregularly pulvinate, 4–7 × 6–8μ. Thyriothecia closely grouped in centre of colony, linear, up to 700 × 150μ, often confluent and sometimes Y-shaped, black, convex, smooth; margin irregularly crenate, not distinctly fimbriate; upper wall of opaque dark brown, irregularly radiating hyphae 3–4μ thick, splitting longitudinally at maturity; lower wall hyaline, fibrous, very thin and indistinctly separated from the internal tissue of hyaline hyphae. This tissue fills the whole interior in young thyriothecia, consisting of tortuous-erect, interwoven, branched and indistinctly septate hyphae 2–2·5μ thick, the erect ends simulating paraphyses between the young asci, and becoming brownish at the tips in the opened ascomata. Asci numerous, erect, sessile, broadly ellipsoid, up to 40 × 20μ, 8-spored. Spores conglobate, long remaining hyaline, finally brown, oblong with rounded ends, 1-septate and slightly constricted at the middle, smooth, 13–14 × 5–7μ. No conidial stage seen.

(91) MICROTHYRIELLA PHAEOSPORA Hansf., n. sp.

Thyriothecia superficialia, epiphylla, levia, applanata, brunneo-atra, orbiculata, usque ad 280μ diam., margine pallidiora pelliculosaque. Mycelium liberum nullum. Asci in textu laxo hypharum hyalinarum singulariter subdenseque immersi sub pellicula myceliale, globosi, tenuiter tunicatae, 15–18μ diam., 8-spori, sessiles. Sporae conglobatae vel subparallelae, clavulatae, 1-septatae, leves, brunnescentes, 10–12 × 4·5–5μ.

Hab. in foliis *Knightiae excelsae*, Kapiti Is., Wellington, New Zealand, leg. H. H. Allan, November 1936.

The thyriothecia are completely superficial, epiphyllous, thin, flat, dark brown, circular, up to 280μ diam., the wide margin much paler and consisting of very pale yellowish-brown wavy-reticulate hyphae about 2–3μ wide, indistinctly septate, in a single layer, agglutinate to form a pellicle which extends over the whole ascoma, becoming darker towards the centre. Here it covers a rather loose weft of tangled hyaline hyphae 2μ thick, much branched, in which the asci are embedded singly, though rather closely, apparently each in its own "locule". The asci are globose, sessile, thin-walled, 15–18μ diam., 8-spored. Spores conglobate to nearly parallel, clavulate, 1-septate, slightly constricted, becoming dark brown when fully mature, 10–12 × 4·5–5μ, the upper cell wider than the lower and subglobose, the lower slightly attenuate to the rounded base.

Formerly this would have been placed in *Eremotheca*, but this genus is now considered not to be sufficiently distinct from *Microthyriella*.

(92) MICROTHYRIELLA FRASERI Hansf., n. sp.

Thyriothecia hypophylla, subdense dispersa, discreta, dilute brunnea, usque ad 350μ diam., in sicco rugulosa, applanata. Mycelium liberum nullum. Paries superior membranaceus, plectenchymaticus, pellucide brunneus, levis, ex hyphis 2·5–4μ cr., indistincte septatis compositus. Paries inferior et nucleus ex hyphis hyalinis 2–3μ cr., irregulariter ramosis, laxe intertextis, tenuiter tunicatis compositi. Asci singulariter

dispersi, globosi, sessiles, usque ad 30μ diam., aparaphysati, 8-spori, tunica circa 2μ cr. Sporae conglobatae, oblongae utrinque obtusae, hyalinae, 1-septatae, lenissime constrictate, 12–17 × 6–7μ, cellulis subaequalibus.

Hab. in foliis *Canthii coprosmoidis*, Hastings R., New South Wales, L. Fraser, April 1952.

There is no free mycelium in this species and each thyriothecium apparently represents the complete development of a single unit; they are closely scattered, hypophyllous, discrete, closely adpressed to the host cuticle, thin and flattened, astomous, pale brown, becoming rugulose when dry, up to 350μ diam. The upper wall is translucent brown, membranaceous, passing at the edge into the mycelial margin of a single layer of agglutinate hyphae forming a pellicle, in the centre wavy-plectenchymatous, smooth, the hyphae 2·5–4μ thick, indistinctly septate. The lower wall and the internal tissue grade into each other, consisting of hyaline, irregularly branched, loosely interwoven hyphae 2–3μ wide, indistinctly septate, forming a loose tissue in which the asci are scattered singly. Asci globose, sessile, up to 30μ diam., 8-spored, aparaphysate, the wall rather thick (–2μ) and brittle at maturity. Spores conglobate, oblong with obtuse ends, 1-septate, very slightly constricted, smooth, hyaline, 12–17 × 6–7μ, the cells more or less equal.

Neither in this, nor in the preceding species could any evidence of penetration of the host be observed in sections; both appear to be saprophytic in habit.

(93) TRICHOPELTIS SP.

On *Cryptocarya meissneri*, Comboyne, New South Wales, L. Fraser, January 1935.

Colonies epiphyllous, black, dendritic, thin and loose, up to 5 mm. diam. or confluent, smooth. Mycelium of parallel hyphae along the centre of each strand, regularly divergent to both sides, brown, septate, 3·5μ thick, the cells 10–12μ long; each strand consists of a single layer of hyphae laterally agglutinate and up to 100μ wide, the surface finely granulose and the ends of the hyphae almost perpendicular to the sides of the strand. The thyriothecia develop as a widened and thickened area of the strand, with a central orifice, the upper wall apparently of mycelial origin and not distinguishable from the rest of the strand, the margin entire or finely crenate, circular, up to 300μ diam. or elongated along the strand; central pore more or less circular, 10–15μ diam. Lower wall hyaline, indistinct. The body of the thyriothecium is filled with a loose tissue of hyaline hyphae 2·5μ thick, septate into short cells which easily separate under pressure, and amongst which the asci develop around the sides, pointing obliquely to the central pore. Asci irregularly ovate-ellipsoid, sessile, rounded and when immature somewhat thickened around the apex, 8-spored, aparaphysate, up to 40 × 10μ. Spores multiseriate and obliquely parallel in ascus, hyaline, clavulate with rounded ends, 2-septate, the upper cell largest and widest, smooth, not constricted at the septa, 10–12 × 3μ.

It is possible that this may be *T. pulchella* Speg., of which I have not seen authentic material. It appears to be completely saprophytic in habit, and certainly is not hyperparasitic upon other fungi.

(94) DIMERIELLA LUDWIGIANUM (Sacc.) Hansf., n. comb.

= *Dimerosporium ludwigianum* Sacc., *Hedwigia*, 1889, and in *Syll. Fung.*, 9:405, 1891.

The original collection was made by Tepper on *Lagenophora stipitata* (*L. Billardieri*), Mt. Lofty, South Australia; it was re-collected by N. T. Flentje on the same host at Port Lincoln, S. Aust., in July 1952.

Colonies amphigenous, dark brown to black, effuse and often confluent over most of the leaf, when single up to 3 mm. diam., thin. Mycelium of exhyphopodiate brown hyphae 2·5–3·5μ thick, the cells up to 25μ long, copiously and irregularly branched, forming a loose network over the leaf, the hyphae flexuous to irregularly bent and connected at intervals direct through the cuticle to a subcuticular mycelium. This latter forms almost a continuous plate beneath the external colony, consisting of hyaline hyphae 2–3μ wide, the cells 5–8μ long, compressed vertically and often in 2–3 layers; no haustoria are produced and no other form of penetration of the host leaf was found on either surface. The perithecia are closely scattered on the external mycelium, and are sessile, black, globose, membranous, up to 100μ diam. and about 90μ high, smooth; from the upper half and the sides arise 10–20 spreading setae, simple, straight or somewhat irregularly bent, septate, dark brown, 30–250 × 3·5–5μ, the shorter ones having obtuse to very slightly clavulate apices, the longer ones often descending to the leaf surface and passing outwards into mycelial hyphae. The perithecial wall consists of an outer dark layer of angular parenchyma, the cells polygonal and up to 15μ diam., lined with one or two layers of much compressed hyaline cells; at first closed, later opening by a rounded apical pore about 10μ diam., surrounded by slightly protruding subhyaline periphyses. Asci basal, numerous, erect, elongate-ellipsoid, broadly rounded at the apex, not noticeably thickened there, nodose-stipitate below, 8-spored, up to 40 × 9–12μ. Paraphyses numerous, filiform, hyaline, continuous, 1–1·5μ thick, not connected above to the perithecial wall. Spores 2-seriate, fusoid with rounded ends, 1-septate, very slightly constricted, the cells sub-equal, 10–12 × 3μ (immature and hyaline). No discharged spores were found in this material, nor any germinating on the leaf surface, so that it remains unknown whether they become olivaceous when fully mature; judging from analogy with other similar leaf-parasites, they probably remain hyaline.

As far as the writer is aware, this fungus has remained a mycological puzzle since its original collection, and it is therefore particularly fortunate that it has now been rediscovered and provisionally assigned to a position in modern classification; the old genus *Dimerosporium* contained a very heterogeneous collection of species now distributed amongst many different genera of Microthyriaceae and Sphaeriales, and as a genus has now been totally discarded.

(95) APHANOSTIGME RUBI Hansf., n. sp.

Mycelium hypophyllum, in tomento folii parasiticum, ex hyphis dilute olivaceis, flexuosis, septatis, ramosis, 2–3μ cr., exhyphopodiatis compositum; haustoria nulla. Perithecia laxe dispersa, superficialia, atra, globosa vel leniter ampullacea, usque ad 120μ diam. et alt.; paries indistincte parenchymaticus, extus granulosus et deorsum hyphis mycelii vestitus, superne setis erecto-patentibus, numerosis, atrobrunneis, rectis vel leniter flexuosis, simplicibus, obtusis, usque ad 60 × 2–3μ ornatus. Ostiolum conicum, poro 10–15μ diam. pertusum, primo cellulis hyalinis mollibus implectum. Asci aparaphysati, basales, numerosi, cylindracei, apice rotundati, subsessiles, 8-spori, usque ad 70 × 10μ. Sporae 2–3-seriatae, hyalinae, fusoideae, rectae vel curvulae, leves, 3-septatae, haud constrictae, utrinque attenuato-rotundatae, 18–22 × 3–4μ.

Hab. in foliis *Rubi moluccani*, Williams R., New South Wales, L. Fraser 112.

This fungus is parasitic upon the leafhairs on the lower surface of the host leaf; its mycelium consists of pale olivaceous, crooked, septate, much branched hyphae 2–3μ thick, ramifying over the leaf surface between the hairs, with branches penetrating these and forming small mycelial knots in the lumen. There are no haustoria or hyphopodia, and no other penetration of the leaf tissue was detected. The perithecia are scattered loosely on the external mycelium amongst the leafhairs and are black, globose to somewhat flask-shaped, up to 120μ diam. and high, with a blunt conical ostiole, which is at first filled with a plug of delicate hyaline parenchyma; the external surface is closely and finely dark-granulose, thus obscuring the parenchymatous structure beneath; the lower part is clothed with mycelial hyphae extending outwards, and the upper half bears numerous erect-spreading setae. These setae are straight to slightly flexuous, simple, obtuse and paler at the apex, apparently continuous, up to 60 × 2–3μ. Asci numerous, basal, aparaphysate, cylindric, subsessile, rounded but not noticeably thickened at the apex, 8-spored, up to 70 × 10μ. Spores 2–3-seriate, hyaline, fusoid with rounded ends, straight or slightly bent, smooth, 3-septate, not constricted, 18–22 × 3–4μ.

This parasite is very inconspicuous at first, but in later stages the tomentum of the leaf is turned reddish in colour; no leafspots are produced.

(96) Meliolinopsis meliolae (Stev.) Petrak, *Sydowia*, 5:334, 1951.

= *Perisporium meliolae* Stev. = *Meliolina meliolae* (Stev.) Stev. = *Phaeophragmeriella meliolae* (Stev.) Hansf.

Parasitic on *Irene kiraiensis* on *Doryphora sassafras*, National Park, New South Wales, Fraser 26.

(97) Coniochaeta williamsi Hansf., n. sp.

Perithecia dispersa vel subgregaria, nigra, globosa, superficialia, usque ad 300μ diam., superne subdense setosa; setae nigrae, continuae, rectae vel curvulae, simplices, usque ad 30μ longae, basi 4–6μ cr., sursum ad apicem acutem attenuatae; paries perithecii fragilis, carbonaceus, pluristratosus, opace atrobrunneus, cellulis polygonalibus, intus pallidioribus. Asci numerosi, cylindracei, apice rotundati, deorsum leniter attenuati, usque ad 80 × 8μ, 8-spori, tenuiter tunicatae. Sporae oblique 1-seriatae, ovatae, brunneae, leves, continuae, 7–9 × 4–5·5μ. Paraphyses numerosae, filiformes, hyalinae, simplices, continuae, ascos aequantes vel leniter superantes, 1μ cr.

Hab. in ligno, Meningie, South Australia, WARI 3533, leg. L. D. Williams.

Perithecia closely scattered or gregarious, black, superficial, up to 300μ diam., globose, rather densely setose above; setae black, 30 × 4–6μ, straight or bent, continuous, gradually attenuate from the base to the acute simple apex. Perithecial wall brittle carbonaceous, of several layers of black polygonal thick-walled cells, paler and thinner inside. Asci numerous, cylindric with rounded apex, not thickened, attenuate below into a short stipe, 8-spored, up to 80 × 8μ. Spores obliquely 1-seriate, ovate with obtuse ends, brown, smooth, continuous, 7–9 × 4–5·5μ. Paraphyses numerous, filiform, hyaline, simple, continuous, equalling or slightly exceeding the asci, 1μ thick.

(98) Phyllachora eragrostidis Doidge, *Bothalia* 4:430, 1942.

On *Eragrostis infecunda*, Two Wells, South Australia, Robertson, April 1953.

(99) Nematothecium australiensis Hansf., n. sp.

Mycelium in plagulis *Ireninae acmenae* parasiticum, ex hyphis hyalinis, 2–3μ cr., indistincte septatis, ramosissimis, dense reticulatis compositum. Perithecia superficialia, laxe dispersa, globosa vel leniter depressa, usque ad 250μ diam., leves, apice irregulariter lateque aperta, extus hyphis mycelii laxe vestita; paries atrobrunneus, dense granulosus, indistincte parenchymaticus, unistratosus. Asci numerosi, erecti, clavati, apice late rotundati, usque ad 45 × 10μ, deorsum breviter lateque stipitati, 4–8-spori. Paraphyses numerosae, filiformes, simplices, hyalinae, usque ad 70μ longae. Sporae parallelae positae, cylindraceae utrinque rotundatae, dilute olivaceae, leves, usque ad 35 × 3μ, indistincte 5-septatae, haud constrictae.

Hab. in foliis *Acmenae smithii*, Myrtle Gully, New South Wales, August 1934, L. Fraser 159.

This fungus is a hyper-parasite of *Irenina acmenae*, and its mycelium forms a thin pellicle over and between the hyphae of its host; the hyphae are hyaline, 2–3μ thick, much branched, indistinctly septate, agglutinate and closely reticulate. Perithecia loosely scattered on the mycelium, globose to somewhat flattened, covered outside with loose hyaline mycelial hyphae, up to 250μ diam., not setose, becoming irregularly and widely open at the apex when mature. Perithecial wall dark brown, closely granulose, the structure very indistinct, but apparently composed of meandering hyphae forming a single pseudoparenchymatous layer. Asci very numerous, basal, erect, clavate with broadly rounded apex, up to 45 × 10μ diam. at the apex, attenuate below into a short wide stipe, containing 4–8 spores; the wall thin and not conspicuously thickened around the apex. Paraphyses very numerous, filiform, simple, hyaline, continuous, up to 70μ long by about 1μ thick. Spores parallel in ascus, cylindric with rounded ends, or very slightly attenuate downwards, becoming pale olivaceous and indistinctly 3-septate when fully mature, not constricted, smooth, up to 35 × 3μ.

The same fungus has been observed on other species of Meliolaceae collected by Dr. Fraser in New South Wales.

(100) **Malacaria australiensis** Hansf., n. sp.

Mycelium ex hyphis hyalinis 1·5–2μ cr., ramosis, reticulatis, subagglutinatis compositum, illud *Ireninae fraserianae* vestiens. Perithecia superficialia, laxe dispersa, globosa, in sicco subcollabascentia, ex fulvo fuscescentia vel nigrescentia, usque ad 140μ diam., extus levia vel hyphis mycelii laxe vestita. Paries perithecii subtranslucens, lentus, parenchymaticus, circa 15–20μ cr., extus ex cellulis rotundato-angulosis 10 × 5μ, et intus ex cellulis hyalinis compressibus compositus. Asci numerosi; paraphysati, late clavati, apice rotundati, deorsum attenuati, basi truncati (3–4μ cr.), usque ad 40 × 13μ, 8-spori. Paraphyses numerosae, filiformes, irregulariter ramosae, hyalinae, ascos superantes. Sporae parallelae, tenuiter clavulatae, apice rotundatae, deorsum lenissime attenuatae, continuae, usque ad 28 × 2·5–3μ, utrinque appendiculatae; appendices setiformes, solidae, hyalinae, rectae vel curvulae, 4–5 × 1μ; sporae maturae dilute olivaceo-brunneae, in massa atrobrunneae.

Hab. in plagulis *Ireninae fraserianae* in foliis *Cryptocaryae glaucescentis*, Williams R., New South Wales, L. Fraser 208.

Mycelium of hyaline hyphae 1·5–2μ thick, much branched and closely investing those of the host fungus, forming a thin network between these, somewhat agglutinate. Perithecia scattered, superficial, globose, becoming flattened when dry and sometimes collapsing, from dirty yellowish becoming fuscous to almost black as the spores mature, up to 140μ diam., the surface smooth or with scattered mycelial hyphae originating half-way up the wall. Wall of subtranslucent brown rounded-polygonal cells about 10 × 5μ, smooth on the exterior surface, enclosing one or more layers of hyaline flattened cells, the whole wall tough, not brittle, in texture and 15–20μ thick. Asci and paraphyses forming an almost solid nucleus extruded intact when the perithecium is compressed; the hymenium covering the basal two-thirds of the loculus, with the asci directed towards the apical pore. Asci broadly clavate, widely rounded at the apex (to 13μ wide), attenuate to the truncate base (3–4μ wide), up to 40μ long, 8-spored; wall rather thin, not thickened at the apex. Paraphyses numerous, filiform, irregularly branched, hyaline, exceeding the asci, 1–1·5μ thick, not septate. Spores parallel in ascus, narrowly clavulate, rounded at the apex, very slightly attenuate downwards to the rounded base, continuous, up to 28 × 2·5–3μ, at first hyaline, becoming greenish-brown, in mass almost black, and furnished at each end with a solid, hyaline, straight or slightly bent bristle, 4–5 × 1μ.

(101) **Gibberella fujikuroi** var. **subglutinans** Edwards, *Agr. Gaz., N.S.W.*, 44:85, 1933.

On old rust sori on *Suaeda australis*, Meningie, South Australia, WARI 3490, leg. L. D. Williams.

(102) **Massarinula phyllodiorum** McAlpine, Proc. Linn. Soc. N.S.W., 28:555, 1903.

On *Acacia myrtifolia*, Mt. Burr, S. Australia, Aug. 1922, WARI 2002, leg. J. G. Wood.

Leafspots penetrating the whole leaf thickness, round, grey with dark brown margin, up to 2 mm. diam., not secedent. Mycelium of septate, hyaline hyphae, much branched, intercellular, without haustoria, penetrating and killing the whole mesophyll, but not extending beyond the margin of the leafspot. Ascomata amphigenous, 1–4 on each spot, subepidermal, globose, up to 250μ diam., becoming slightly erumpent with age, the epidermis sloughing off above them, black, hard and stromatic; in early stages consisting of an outer part of thick-walled, dark brown, angular cells, passing gradually into a hyaline, pseudoparenchymatous centrum of delicate thin-walled cells. At the base of this centrum the asci develop singly, in a broken single layer, and enlarge upwards at the expense of the centrum tissue, till at maturity they appear to be separated by thin partitions of septate, more or less compressed "paraphysoids". The ascoma eventually opens by irregular fracture of the apex of the outer, dark, stromatic wall. Asci about 12, erect, clavate, up to 180μ long, the apex widely rounded and 40–50μ diam., gradually narrowed to the basal stipe, which is usually bent and about 10μ thick, 25–30μ long; ascus wall 1–1·5μ thick in the lower part, thickened around the apex to 5μ, with a central "internal pore"; asci 8-spored, aparaphysate. Spores parallel, overlapping, hyaline, fusoid, slightly bent, rounded at both ends, 1-septate and slightly constricted in the middle, smooth, 55–65 × 12–14μ, the cells equal.

(103) MONTAGNELLINA GOODIAE Hansf., n. sp.

Perithecia epiphylla, dispersa, immersa, glabra, atra, 150–250μ diam. et 300μ alt., globosa vel ampullacea, haud prominula, membranacea; paries circa 20–25μ cr., deorsum subhyalinus, sursum atrobrunneus, apice ad 40μ incrassatus et ad stroma subepidermale atrobrunnea confluens, pluristratosus, parenchymaticus. Centrum loculi ex pseudoparaphysibus hyalinis, 3–4μ cr., septatis, simplicibus vel furcatis, laxe intertextis compositum. Asci basales, numerosi, erecti, aparaphysati, cylindracei vel clavati, apice rotundati, deorsum in stipitem brevem attenuati, 8-spori, 80–100 × 9–20μ, tunica sursum incrassata usque ad 3–4μ, poro interno centrali praedita. Sporae 1-seriatae vel plus minusve oblique 2-seriatae, hyalinae, ellipsoideae, obtusae, leves, continuae, 12–15 × 7–8μ.

Hab. in foliis *Goodiae medicagineae*, Rocky River, Kangaroo Is., South Australia, Oct. 1922, leg. T. G. Osborn, WARI 1997.

Perithecia scattered over the older leaves, which are somewhat yellowed, but not on definite leafspots, epiphyllous, immersed, glabrous, about 300μ deep and 150–250μ diam., globose to flask-shaped, with short neck not protruding above the epidermis, black, membranous. Perithecial wall about 20–25μ thick, in the deeper parts subhyaline, towards the apex becoming dark brown on the exterior, and thickened up to 40μ, at the apex confluent with a stroma developed between the flat epidermal cells and the palisade tissue, composed of dark brown pseudoparenchyma, not filling the epidermal cells to form a true clypeus; wall of perithecium of concentric flattened pseudoparenchyma in several layers. The centrum consists of pseudoparaphyses joined both at the apex and the base to the innermost wall layer, usually simple though sometimes branched, 3–4μ thick, septate, hyaline, with delicate walls. Into this rather loose tissue the asci develop from the base of the loculus; numerous, erect or convergent towards the apex of the loculus, gradually crushing and replacing the original centrum, finally appearing aparaphysate, cylindric to clavate, rounded at the apex, with attenuated basal stipe portion, 8-spored, 80–100 × 9–20μ; the wall thin, except around the apex where it is thickened to 3–4μ and has a central internal pore. Spores 1-seriate or more or less obliquely 2-seriate, hyaline, ellipsoid, smooth, continuous, 12–15 × 7–8μ. Internal mycelium copious, of septate, hyaline, branched hyphae 2–4μ wide, intercellular, without haustoria.

The fungus resembles a *Phyllachora*, but the perithecia are always single and have no true clypeus; the ostiole is lined with very short hyaline periphyses, with a pore about 20μ diam.

(104) BOTRYOSPHAERIA BANKSIAE, Hansf., n. sp.

Ascomata hypophylla, in greges 2–10 dense aggregata, nigra, subglobosa, levia, usque ad 470μ diam. et alt., apice poro minuto pertusa, interdum lateraliter connata vel 2-loculata. Loculi subampullacei, circa 300μ alt. et 270μ diam., collo conoideo, circa 100μ longo et basi 100μ diam., sursum in poro apicali 30μ diam. contracto. Asci numerosi, aparaphysati, cylindracei, 8-spori, apice rotundati, subsessiles vel brevissime stipitati, usque ad 120 × 18μ, evanescenti. Sporae oblique vel transverse 1-seriatae, ellipsoideae, hyalinae, leves, continuae, 17–20 × 13–15μ, episporio 1·5μ cr.

Hab. in foliis *Banksiae marginatae*, Normanville, South Australia, WARI 2064, leg. G. Samuel, Jan. 1924 (typus); Kuitpo, S. Austr., Dec. 1921, G. Samuel.

Ascomata hypophyllous, often amongst the colonies of *Parodiella banksiae*, from which they are easily distinguished by their much larger size, in small close groups up to 1 mm. diam., black, subglobose, smooth, sometimes slightly papillate above, up to 470μ high and diam., opening at the apex by a minute round pore; often laterally connate or some of the larger individuals containing 2 loculi.

The mycelium is of limited extent in the leaf mesophyll, consisting of much branched, septate, hyaline hyphae, intercellular, without haustoria. In the centre of each infection an internal hyaline stroma is formed, reaching from the base of the palisade tissue to the lower epidermis, composed of small pseudoparenchyma which eventually darkens beneath the epidermis, this being burst as the stroma expands to form an erumpent black tubercle containing one or sometimes two ascigerous loculi. Similar tubercles arise in close proximity from the same stroma till a group of 5–10 ascomata is formed. Each loculus is surrounded by a wall of 4–10 layers of much compressed hyaline to yellow-brown parenchyma, passing outside into the stroma tissue, but often distinct from the latter around the base and sides, this inner layer being 5–15μ thick. The middle layers of the tissue of the ascostroma are plectenchymic like the hypostroma, of which they are a continuation, and may often be much compressed or even absent, then the inner loculus wall passing direct into the black parenchyma of larger cells forming the external stroma wall; the whole wall from outside to loculus cavity is about 50μ thick around the sides. The outermost layers are of thick-walled rounded cells, opaque dark brown to black, about 10μ diam., the external surface somewhat roughened with outgrowths, or quite smooth and shining black.

The loculus, when single, is somewhat flask-shaped, with short apical neck, about 300μ high and 270μ diam., the sides and base lined with numerous asci directed towards the apical pore; the neck is short conoid, about 100μ long and wide at the base, contracting to the apical pore, which is about 30μ diam., lined with delicate parallel periphyses directed upwards, but with few free ends. The young loculus is filled with a loose tissue of hyaline hyphae connected above and below with the innermost wall layer; amongst these the asci develop, and their remains in the mature loculus simulate septate paraphyses about 1·5μ thick. The ostiolar cavity appears to be of lysigenous origin. Asci numerous, cylindric, 8-spored, rounded at the apex, sessile or with very short wide basal stipe, thin-walled, about 120 × 18μ, disappearing early to leave the spores free inside the loculus. Spores obliquely or even transversely 1-seriate, ellipsoid. hyaline, smooth, continuous, 17–20 × 13–15μ, the epispore 1·5μ thick. Intact asci were rare in both collections examined.

(105) PSEUDOSPHAERIA SAMUELI Hansf., n. sp.

Maculae amphigenae, irregulariter rotundato-dendriticae, leniter rugulosae, fulvo- vel atro-brunneae, subzonatae. Mycelium sub epidermide stromatice aggregatum, ex hyphis hyalinis 1–2μ cr., septatis, intertextis compositum, in mesophyllum hyphis singulis intercellularibus profunde penetrantibus, haustoriis nullis. Ascomata in stromate subcuticulare orta, usque ad 120μ diam. et 60μ alt., apice poro rotundato circa 10μ diam., pertusa, glabra, nigra, 1-(2)-loculata; paries olivaceo-brunneus, plectenchymaticus, deorsum circa 8–10μ cr., sursum obscurior vel opace niger et incrassatus usque ad 15–20μ; intus hyphis hyalinis intertextus primo repleta. Asci modice numerosi, lateralo-basales, apicem loculi versus directi, aparaphysati, cylindracei vel saccati, sursum late rotundati, deorsum breviter stipitati, usque ad 100 × 35μ, 8-spori, tenuiter tunicati. Sporae subparallelae, cylindraceae utrinque rotundatae, hyalinae, 3-septatae, haud constrictae, eguttulatae, 60–65 × 6–7μ.

Hab. in foliis *Eucalypti obliquae*, Cape Jervis Peninsula, South Australia, Jan. 1924, WARI 2069, leg. G. Samuel; Balhannah, S. Austr., May 1922, WARI 2068, leg. G. Samuel; in foliis *E. rostratae*, Noarlunga, S. Austr., May 1924, WARI 2072, leg. G. Samuel.

On *Eucalyptus obliqua* the leafspots are amphigenous, irregularly rounded to dendritic, slightly rugulose-elevated, buff to dark brown, indistinctly zonate, with rather indefinite rings of black ascomata; on *E. rostrata* the spots are only 3 mm. diam., more condensed, with the ascomata closely crowded and not circinately scattered. The mycelium is entirely within the host leaf, and aggregates beneath the epidermis as a thin stroma of fine hyaline septate interwoven hyphae, penetrating deep into the mesophyll as isolated hyphae, which are intercellular and without haustoria, sometimes reaching the opposite epidermis; the subepidermal stroma is up to 25μ thick, the individual hyphae 1·5–3μ wide, in many places parallel and closely adnate.

The ascomata arise as thickened darker areas within the stroma, each surrounded by an olivaceous brown wall of compressed plectenchyma, about 8–10μ thick below the loculus and thickened around the sides and upper part to 15–20μ, where it is much darker to subopaque or black. The loculus is flattened globose, up to 120μ diam. and 60μ high, at first filled with a tissue of interwoven hyaline septate hyphae, the remains of which form a lining to the wall of the mature ascoma, the rest being replaced by the developing asci. Sometimes a single ascoma may contain at first two separate loculi, separated by a central column of tissue similar to that of the wall; this may eventually break down and the loculi become confluent. The ascoma opens at maturity by a lysigenous apical pore about 10μ diam. Around the upper part of the ascoma the stroma turns dark brown and is confluent with the apex of the loculus wall, peripherally becoming distinct and merging into the subepidermal stroma; traces of the epidermal cells remain above the dark stroma mass, which can hardly be said to constitute an epidermal clypeus.

The asci develop around the base of the loculus, the older ones more peripheral, and enlarge at the expense of the original plectenchymic centrum, eventually more or less completely filling the loculus; they are fairly numerous, aparaphysate, cylindric to saccate, widely rounded and not thickened above, contracted below into a very short stipe, up to 100 × 35μ, 8-spored, thin-walled and apparently uni-tunicate. Spores parallel in ascus, cylindric with rounded ends, often slightly bent, hyaline, smooth, transversely 3-septate, not constricted, not guttulate, 60–65 × 6–7μ.

(106) PARODIELLA BANKSIAE Sacc. & Bizz., *Syll. Fung.*, 9:410, 1891.

This species appears to be fairly common on species of *Banksia* in Tasmania, Victoria, New South Wales and South Australia. It forms indistinct black patches on the lower surface of the leaf, often obscured by the tomentum and then with only the groups of ascomata showing through. The mycelium penetrates through the stomata and ramifies in the intercellular spaces of the mesophyll, rarely penetrating high up in the palisade tissue, the internal hyphae being hyaline, septate, 3–5μ thick, not forming haustoria. The external mycelium spreads between the leaf-hairs over the surface, and consists of brown, much branched, septate hyphae 4–5μ thick, without hyphopodia or stomopodia, aggregated in places to form small stromata and attached to the bases of the ascomata. The latter are closely aggregated and often sub-confluent at the sides, black, smooth above, obpiriform to globose, 100–160μ diam., and high, completely superficial amongst the leaf-hairs and attached only by mycelial hyphae, glabrous, rather hard in texture. The wall consists of several layers of dark brown, angular parenchyma, thick-walled in the outer layers, thinner inside, the cells up to 12 × 8μ, the whole wall of the mature ascoma about 25μ thick at the apex and sides, thicker below; enclosing at first a hyaline parenchymatous centrum, which is absorbed as the asci develop, leaving finally only a few loose scattered cells amongst and above the asci. Asci basal, erect, aparaphysate, fairly numerous, sessile on a hyaline tissue of delicate, interwoven, branched hyphae at the base of the loculus (? ascogenous hyphae), elongate clavulate, rounded and slightly thickened at the apex, without definite internal apical canal, not obviously bi-tunicate, 8-spored, up to 70 × 14μ. Spores obliquely 2-seriate, dark brown, 1-septate, slightly constricted, smooth, 14–15 × 4–5μ, the upper cell slightly broader than the lower. There is no ostiole and the ascomata open by irregular fracture of the apex when mature.

(107) PHYSALOSPORA ACACIAE Hansf., n. sp.

Mycelium in cortice ramulorum perennans et gallas efformans; perithecia in cortice immersa, globosa, atra, usque ad 150μ diam., dense stipata et pycnidiis *Diplodiae* intermixta. Asci clavata, subsessiles, apice late rotundati incrassatique (–7μ), recti vel curvuli, 8-spori, usque ad 90 × 28μ; paraphyses filiformes, hyalinae, simplices, continuae, ascos aequantes. Sporae irregulariter positae, ellipsoideae, obtusae, hyalinae, leves, continuae, subinde lenissime inaequilaterae, haud guttulatae, 20–24 × 9–10μ, episporio tenui.

Hab. in ramilis *Acaciae baileyanae*, Pennant Hills, New South Wales, Aug. 1953, L. Fraser (WARI 3568).

The fungus invades the cortex of young twigs, causing at first greyish areas with a dark margin, these later becoming slightly elevated, developing in later seasons into galls and causing distortion of the twigs; the gall tissue consists mainly of the hypertrophied cortex with intercellular hyaline hyphae without haustoria. The perithecia are completely sunken in the gall tissue with only the apical pore reaching the surface; globose, black, glabrous, up to 150μ diam., closely crowded and mixed with pycnidia of *Diplodia* type. Asci clavate, subsessile, widely rounded and thickened up to 7μ around the apex, with a shallow wide internal apical canal, straight or slightly bent, 8-spored. Spores irregularly arranged in the ascus, ellipsoid with obtuse ends, straight or slightly inequilateral in side view, hyaline, smooth, continuous, thin-walled, not guttulate, 20–24 × 9–10μ. Paraphyses equalling the asci, filiform, hyaline, continuous, simple.

(108) PHYSALOSPORA XANTHORRHOEAE Hansf., n. sp.

Perithecia numerosa, dispersa vel lineare 2–3-aggregata, subepidermalia, depresse globosa, atra, glabra, submembranacea vel coriacea, 100–180μ diam., circa 130μ alt., apice poro pertusa; paries atrobrunneus, 2–4-stratosus, intus hyalinus. Asci basales, elongato-clavati vel subcylindracei, apice late rotundati incrassatique (–10μ), deorsum in stipitem brevem attenuati, 8-spori, usque ad 120 × 20–25μ. Sporae oblique 2-seriatae, hyalinae, ellipsoideae vel clavulatae, continuae, leves, 22–25 × 7–9μ. Paraphyses numerosae, filiformes, ascos aequantes, 2–2·5μ cr., continuae, rectae vel flexuosae, simplices.

Pycnidia (*Macrophoma*) peritheciis consimilia et commixta, usque ad 200μ diam.; sporophoras breviter cylindracea, pycnosporae cylindraceae utrinque rotundatae, hyalinae, continuae, leves, 15–19 × 3–4μ, singula et acrogenea.

Hab. in caule emortuo *Xanthorrhoeae semiglaucae*, Meningie, South Australia, July 1953, L. D. Williams 43.

The perithecia occur mixed with the *Macrophoma* pycnidia on the dead flowering scape of the host, numerous, scattered singly or in linear groups of 2–3, subepidermal, with a minute pore opening to the surface, flattened globose, black, smooth, glabrous, leathery-membranous, 100–180μ diam. and about 130μ high, easily separable from the host tissue and from the covering epidermis. Perithecial wall of several layers of dark olivaceous parenchyma, lined with compressed hyaline layers. Asci in a basal hymenium, erect, elongate clavate to subcylindric, broadly rounded and thickened at the apex to 10μ, with central internal canal, attenuate below into a short flexuous stipe, 8-spored, up to 120 × 20–25μ. Paraphyses numerous, filiform, equalling the asci and about 2–2·5μ thick, continuous, straight or flexuous, not swollen at the apex, hyaline. Spores obliquely 2-seriate, hyaline, smooth, ellipsoid to slightly clavulate, the ends broadly rounded, continuous, 22–25 × 7–9μ.

Macrophoma pycnidia similar to the perithecia, but often up to 200μ diam.; the wall lined with short cylindric simple conidiophores abstricting single conidia from their apices; pycnospores cylindric with rounded ends, hyaline, continuous, smooth, 15–19 × 3–4μ.

(109) LEPTOSPHAERIA HARDENBERGIAE Hansf., n. sp.

Maculae 1–3 mm. diam., amphigenae, griseae, non secedentes, in centro arescentes, margine atrobrunneae, primo zono flavo 1–1·5 mm. cr. circumdatae, subinde confluentes irregularesque. Perithecia amphigenea, immersa, nigra, levia, glabra, globosa, usque ad 180μ diam.; paries membranaceus, parenchymaticus, 3–4-stratosus, strato exteriore ex cellulis polygonalibus atrobrunneus, circa 12μ diam. composito, stratis interioribus subhyalinis, fortiter compressibus. Asci numerosi, basales, fasciculati, cylindraceo-clavati, subsessiles, usque ad 70 × 12–15μ, 8-spori. Paraphyses hyalinae, filiformes, continuae, asci subaequantes. Sporae 1–2-seriatae, olivaceae, fusoideae utrinque rotundatae, curvulae, leves, 5-septatae, haud constrictae, 16–20 × 4·5–6μ.

Hab. in foliis *Hardenbergiae violaceae*, Port Lincoln, July 1952, N. T. Flentje.

Leaf-spots amphigenous, at first surrounded by a yellow zone 1–1·5 mm. wide, then enlarging and with a dark brown margin, the centre drying out to grey-white, not usually secedent, rounded in outline, 1–3 mm. diam. or confluent and irregular. Perithecia amphigenous, immersed in the mesophyll, black, smooth, glabrous, globose, up to 180μ diam.; perithecial wall membranous, parenchymatous, consisting of an outer layer of dark polygonal cells about 12μ diam., enclosing two or three layers of subhyaline, much compressed cells. Asci numerous, in a single large basal fascicle, the inner ones straight, the outer incurved and directed towards the apical pore of the perithecium, cylindric-clavate, subsessile, rounded at the apex, not noticeably thickened, 8-spored, up to 70 × 12–15μ. Spores olivaceous-brown, fusoid with rounded ends, slightly bent, smooth, 5-septate, not constricted, 16–20 × 4·5–6μ, 1-2-seriate in the ascus. Paraphyses hyaline, filiform, continuous, equalling the asci.

Associated with *Septoria hardenbergiae* Sacc. and *Pleospora herbarum* Rabh.

(110) LEPTOSPHAERIA MICHOTII (Westd.) Sacc., *Fungi ital.* t. 279; *Sacc. Syll. Fung.*, 2:58, 1883.

On dead culms of *Bromus gussonii*, Meningie, South Australia, L. D. Williams (WARI 3525, p.p.).

This specimen corresponds closely with the revised description given by E. Muller in *Sydowia*, 4:253, 1950.

(111) LEPTOSPHAERIA RESTIONIS Hansf., n. sp.

Perithecia in corticem immersa, subaggregata, atra, ampullacea vel subglobosa, usque ad 180μ diam., et 200μ alt., ostiolo haud prominente, obtuse conoideo praedita. Paries perithecii pluristratosus, extus atrobrunneus, intus hyalinus, in massam parenchymaticam hyalinam centralem transeuns. Asci numerosi, erecti, cylindracei, apice rotundati incrassatique (–5μ), sessiles, 8-spori, 70–80 × 15–19μ. Paraphyses hyalinae, furcatae, apice leniter clavulatae, continuae vel indistincte septatae, deorsum circa 1μ crassae. Sporae oblique 1–2-seriatae, ex hyalino brunnescentes, fusoideae utrinque rotundatae, 3-septatae, leniter constrictae, leves, 16–19 × 7–8μ, cellula subapicale majore.

Hab. in caulibus *Restionis australis*, Pipers Bridge, Kosciusko, New South Wales, A. Costin 63, April 1947.

Perithecia completely immersed in the cortex with only the obtusely conoid ostiole reaching the surface and not protruding, closely scattered and sometimes sub-connate, on greyish-white areas of the stem, where the killed epidermis easily separates from the cortex; black, flask-shaped to subglobose, up to 200μ high and about 180μ diam. Wall of perithecium of several layers of dark brown parenchyma, passing inwards to the delicate hyaline ground tissue, which at first completely fills the interior and is replaced later almost entirely by the developing asci, leaving only a few, hyaline, branched and anastomosing "paraphyses", often attached to the "wall" at both ends, or with their apices slightly clavulate and free, indistinctly septate, about 1μ thick below. Asci numerous, basal, erect, maturing in succession and then collapsing, cylindric with rounded apex thickened up to 5μ when immature, sessile, 8-spored, 70–80 × 15–19μ. Spores obliquely 1–2-seriate, becoming brown when fully mature, fusoid with rounded ends, 3-septate, constricted at the middle septum and less so at the others, the upper half slightly wider than the lower, with the subapical cell the largest, epispore smooth, 16–19 × 7–8μ.

Mixed with the perithecia are conidial pycnidia, smaller than the perithecia and with thinner walls, lined with hyaline parenchyma; pycnospores borne direct on short sterigmata formed in the innermost wall layer, cylindric with rounded ends, hyaline, single and terminal on the sterigmata, smooth, continuous, 4–5 × 1μ.

(112) LINOCARPON STIPAE Hansf., n. sp.

Perithecia dispersa vel laxe gregaria, nigra, plus minusve globosa, glabra, 300–500μ diam., superne ostiolo obtuse cylindraceo, usque ad 150μ alt. et 100μ diam. ornata;

paries pluristratosus, atrobrunneus, ex cellulis 4–15 × 4–10μ compositus, circa 30μ crassus, intus subhyalinus. Asci numerosi, cylindracei, apice rotundati et incrassati (–5μ), deorsum in pedicello attenuati, 8-spori, usque ad 180 × 10–14μ. Sporae parallelae, rectae, hyalinae vel in massa dilute olivaceae, filiformes, apice rotundatae, deorsum lenissime attenuatae, basi rotundatae, 100–140 × 3–4μ, 11–13-septatae, haud constrictae, leves.

Hab. in culmis emortuis *Stipae* spec. indet., Meningie, South Australia, WARI 3488, leg. L. D. Williams.

Perithecia scattered or loosely gregarious, black, more or less globose, immersed, with projecting short cylindric obtuse ostiole up to 150μ long by about 100μ diam.; body 300–500μ diam.; wall of several layers of angular dark brown cells, 4–15 × 4–10μ, the whole wall about 30μ thick, lined with paler to hyaline compressed cells. The ostiole is lined with short, upward directed, hyaline periphyses. Asci numerous, cylindric with rounded apex which is thickened to 4–5μ, leaving a rather long, narrow central canal in immature asci, this disappearing more or less completely at maturity, narrowed below into a stalk portion about 3μ thick and 20–30μ long, 8-spored, the complete ascus up to 180 × 10–14μ. Paraphyses numerous, filiform, delicate, hyaline, septate, about 1μ thick, apparently simple, not expanded at the apex. Spores parallel and straight in the ascus, filiform, hyaline individually, pale olivaceous in mass, rounded at the apex, very slightly attenuate downwards to the rounded base, 100–140 × 3–4μ, 11–13-septate, the septa very thin, not constricted, smooth, becoming more or less bent to curved after discharge. No conidial stage seen.

(113) LINOCARPON WILLIAMSII Hansf., n. sp.

Perithecia immersa, dispersa, nigra, globosa vel lateraliter subcompressa, usque ad 180μ diam., ostiolo prominulo, breviter obtuse conoideo, poro pertuso, glabro. Paries perithecii membranaceus, lentus, atrobrunneus, ex cellulis polygonalibus 8–12μ diam., compositus, 2–3-stratosus. Asci cylindracei, apice rotundati, deorsum in stipitem filiformem attenuati, 8-spori, usque ad 180 × 8–10μ. Sporae parallelae, rectae, filiformes, hyalinae, leves, rectae vel flexuosae, indistincte tenuiter 5–7-septatae, usque ad 130μ longae, apice 2μ crassae et rotundatae, deorsum lenissime attenuati, basi rotundati et 1μ crassae, in massa dilutissime olivaceae. Paraphyses numerosae, filiformes, hyalinae, simplices, indistincte septatae, 1μ cr., ascos subaequantes.

Hab. in culmis emortuos *Graminearum* spec. indet., Meningie, South Australia, WARI 3542, leg. L. D. Williams.

Perithecia immersed, scattered, black, globose to somewhat flattened laterally, up to 180μ diam., with slightly erumpent, short, obtusely conoid ostiole pierced by a pore and lined with very short, hyaline, upward-directed periphyses. The perithecia are quite glabrous, and have a membranaceous, tough, dark brown wall, consisting of 2–3 layers of flattened, polygonal cells, 8–12μ diam., irregularly arranged save in the ostiolar region where they are more regularly longitudinal. Asci numerous, cylindric with rounded apex, attenuate below into a narrow elongate (–30μ) stipe, 8-spored, the wall very thin save in immature asci, where it is thickened at the apex to leave a very narrow internal canal, which disappears completely at maturity, up to 180 × 8–10μ. Spores parallel and straight in the ascus, becoming more or less curved after discharge, filiform, gradually attenuate from the rounded apex, 2μ wide, to the base (1μ wide), hyaline, smooth, indistinctly and thinly 5–7-septate, up to 130μ long, when fully mature appearing faintly olivaceous in mass. Paraphyses numerous, filiform, hyaline, simple, indistinctly septate, 1μ thick, equalling or somewhat shorter than the asci, and closely resembling the spores.

(114) MYCOSPHAERELLA SUAEDAE-AUSTRALIS Hansf., n. sp.

Perithecia in caulibus dispersa, immersa, nigra, punctiformia, circa 150μ diam., glabra, sursum in ostiolum brevum papillatum nigrum glabrum attenuata, haud prominula; paries perithecii tenuiter membranaceus, 1–2-stratosus, ex cellulis atrobrunneis angulosis compositus, deorsum pallidior. Asci fasciculati, aparaphysati, plerumque incurvati, subcylindracei, apice incrassati (–5μ), rotundati, deorsum in stipitem brevem attenuati, usque ad 60 × 13μ, 8-spori. Sporae pluriseriatae, parallelae, ellipsoideae utrinque rotundatae, hyalinae, leves, 1-septatae, haud constrictae, 18–20 × 3–3·5μ.

Pycnidia (SEPTORIA SUADAE-AUSTRALIS Hansf., sp. n.): Pycnidia laxe vel subdense dispersa, nigra, punctiformia, immersa, glabra, usque ad 150μ diam., apice poro lato pertusa; paries pycnidii tenuiter membranaceus, ex cellulis angulosis brunneus compositus. Pycnosporae filiformes, rectae vel curvulae, hyalinae, 3-septatae, leves, haud constrictae, 45–58 × 3μ, utrinque lenissime attenuatae.

Hab. in caulibus emortuos *Suaedae australis*, Meningie, South Australia, WARI 3490, leg. L. D. Williams.

Neither stage of this fungus causes spots on the dead stems of the host. The perithecia are scattered, immersed, black, punctiform, about 150μ diam., with slightly papillate, blunt ostiole reaching the surface of the epidermis and pierced by a pore, glabrous; wall thinly membranous, of 1–2 layers of dark brown angular cells, paler below. Asci fasciculate, aparaphysate, mostly incurved, subcylindric with broadly rounded apex thickened to 5μ when immature, attenuate below into short nodose stipe, up to 60 × 13μ, 8-spored. Spores multiseriate and parallel in ascus, overlapping, narrowly ellipsoid with slightly attenuate rounded ends, hyaline, smooth, 1-septate, not constricted, 18–20 × 3–3½μ.

Pycnidial stage: Spots none; pycnidia loosely to rather closely scattered on the dead stems, black, punctiform, immersed save for the apex which penetrates the epidermis and has a rather wide pore, glabrous, up to 150μ diam. Pycnidial wall thinly membranous, of brown angular cells, darker around the apex, passing to subhyaline deeper within the host tissue. Pycnospores filiform, straight or bent, hyaline, smooth, 3-septate, not constricted, 45–58 × 3μ, very slightly attenuate to each rounded end, often slightly more towards the apex. Sporophores not seen.

The pycnidia occur mixed with the perithecia.

(115) PLEOSPORA HERBARUM (Pers. ex Fr.) Rabh., in *Herb. Myc.* 2: no. 547.

On dead scape, of *Allium cepa*, Meningie, South Australia, L. D. Williams, WARI 3539.

This is on the type host of the species; the spores are transversely 7-septate, with usually two longitudinal septa in the larger cells, and measure 28–35 × 15–17μ. Other South Australian collections more or less closely matching the above are:

On dead wood of *Limonum* sp., Meningie, L. D. Williams, WARI 3546; on dead stem *Dianthus* sp., *l.c.*, WARI 3495; on dead stem *Lupinus paludosus*, *l.c.* WARI 3497; all collected by L. D. Williams.

(116) PLEOSPORA SCHIRROIDES Sacc., *Michelia* 2:68, 1880 (prox.).

On dead leaves *Stipa* sp., Meningie, S. Australia, L. D. Williams, WARI 3480.

Spores transversely 3-septate, with 1 longitudinal septum in one or both central cells, 18–22 × 7–9μ.

(117) PLEOSPORA VULGARIS Niessl, *Verh. Naturf. Ver. Brunn*, 3:27, 1864.

On dead stem *Geranium* sp., Meningie, South Australia, L. D. Williams, WARI 3538.

This specimen has 5-septate and longitudinally 1-septate spores, measuring 16–18 × 7–8μ.

(118) PSEUDOSPHAERELLA PERSOONIAE (P. Henn.) Hansf., comb. n.

= *Mycosphaerella persooniae* P. Henn., *Hedwigia*, 42:81, 1903. = *Sphaerella persooniae* (P. Henn.) Sacc., *Syll. Fung.*, 17:639, 1905.

The conidial stage was described by Hennings, *l.c.*, 42:87, 1903, as *Dichomera persooniae*.

Specimens examined: On *Persoonia salicina*, Nowra, New South Wales, G. Samuel, February 1922, WARI 2030; Pennant Hills, N.S.W., L. Fraser, July 1953, WARI 3862.

The fruiting structures of the fungus are developed on epiphyllous dark spots up to 8 mm. diam., scattered over the host leaf; the colour of these spots is mainly due to a subcuticular plate of 1–2 layers of dark brown, erect, rectangular cells, up to 20μ deep, extending in places between the epidermal cells to reach the palisade tissue, above which it breaks up into single hyaline hyphae, without haustoria. This subcuticular mycelial plate is connected around the developing fructifications, directly through the cuticle by fine dark filaments, with an external mycelium on the leaf surface, of pale brown, septate, exhyphopodiate, crooked, much branched and reticulate hyphae 3–5μ wide.

The conidial stage can be construed either as a widely open pycnidium or as an acervulus; it develops first as a local thickening of the dark subcuticular mycelial plate, then forming a flattened-globose loculus, which raises, and finally bursts the host cuticle, to become widely open and surrounded by the remains of its "wall"; the latter appears to be derived almost entirely from the subcuticular mycelium. The base of the loculus consists of short erect cells of the stroma, which bud off single conidia from their apices, and no sterigmata or conidiophores are differentiated. Conidia dark brown, ovate-ellipsoid, rounded at the apex, very slightly truncate at the base, smooth or indistinctly roughened-granulose on the surface, 1-(3)-septate, not constricted, 12–19 × 6–7μ. A few conidia are muriform aggregations of 3–4 cells, but these are regarded as abnormal. The acervuli when single reach 260μ diam., but are frequently more or less confluent in small groups up to 1 mm. diam.

The ascomata develop in a manner similar to the pycnidia or acervuli, from local thickenings of the subcuticular mycelial plate, which enlarge to burst through the cuticle and then become globose, black and hard, up to 200μ diam., usually containing a single loculus, and scattered unevenly over the surface of the leafspot, becoming very brittle when fully mature, without a definite pore or ostiole. The outer wall is parenchymatous, the cells black and with rather thickened walls on the exterior surface, the inner layers passing gradually into a central mass of hyaline, delicate parenchyma. In the base of this central ground tissue a rosette of asci develops, without paraphyses, for a long time remaining surrounded by the residue of the ground tissue, and the individual asci sometimes separated by strands of this, simulating septate paraphyses. The whole group of asci can be forced out from slightly immature ascomata more or less intact and enclosed within the hyaline ground tissue. Asci ellipsoid-saccate, rounded-attenuate and thickened up to 4μ at the apex, with some trace of a rather wide "internal canal", slightly constricted at the shortly nodose-stipitate base, straight or bent, 8-spored, about 50 × 15μ when fully mature. Spores 2–3-seriate and somewhat parallel within the ascus, hyaline, ellipsoid with rounded ends, 1-septate, not constricted, the cells more or less equal, 15–16 × 3·5–4·5μ.

(119) ASCOBOLUS GLABER Pers. in *Romer's Neues Mag. Bot.*, 1:115, 1794.
On cowdung, Meningie, L. D. Williams, WARI 3516.

(120) ASCOPHANUS CARNEUS (Pers.) Boud., *Ann. Sci. Nat.*, 5:10:250, 1869.

On sterilized soil in greenhouse, WARI, July 1953. These specimens differ from Seaver's description (N. Amer. Cup-Fungi, 1:115, 1942) in that the spores remain permanently quite smooth and no orange granules are contained in the paraphyses, though these appear pink in mass.

Also collected on dung, Meningie, South Australia, June 1953, L. D. Williams 31.

(121) ASCOPHANUS GRANULIFORMIS (Crouan) Boud., *Ann. Sci. Nat.*, 5:10:245, 1869.
On cowdung, Meningie, S. Australia, L. D. Williams, WARI 3516.

(122) ASCOPHANUS OCHRACEUS (Crouan) Boud., *Ann. Sci. Nat.*, 5:10:247, 1869.
On cowdung, Meningie, S. Australia, L. D. Williams, WARI 3517.

(123) GODRONIA DAVIESIAE Hansf., n. sp.

Apothecia dispersa vel 2–3-aggregata, per peridermidem erumpentia tum cortice disrupto circumdata, sessilia, circa 500μ diam., extus nigra, levia, tenuiter cupulata; hymenium applanatum, molliter carnosum, in sicco obdurescens, griseum. Asci cylindracei, deorsum leniter attenuati, apice abrupte rotundati, 8-spori, usque ad 200 × 6–8μ. Sporae parallelae, in asco rectae, liberae varie curvatae, hyalinae, filiformes utrinque obtusae, usque ad 140 × 1·5–2μ, obsolete multiseptatae, segmentibus circa 3μ longis. Paraphyses filiformes, numerosae, simplices vel in medio furcatae, ascos aequantes vel leniter superantes, 1·5–2μ crassae, verisimiliter continuae, hyalinae.

Hab. in ramulis emortuos *Daviesiae brevifoliae*, Meningie, South Australia, L. D. Williams, WARI 3520.

Apothecia on dead twigs, more or less scattered or in groups of 2–3, erumpent through the bark and then surrounded by the broken cortex, sessile, about 500μ diam.; externally black, the hymenium grey and surrounded by the rather thick irregularly shallow-cupulate exciple; hymenium flat, soft fleshy when moist, drying hard. Asci cylindric, somewhat attenuate below into stalk portion which may be very short, abruptly rounded at apex, 8-spored, up to 200 × 6–8μ. Spores parallel and straight in ascus, becoming variously curved after discharge, hyaline, filiform with obtuse ends, up to 140 × 1·5–2μ, with many indistinct cross-septa, the contents being divided into segments about 3μ long. Paraphyses filiform, numerous, simple or once-furcate at or near the middle, equalling or somewhat exceeding the asci, 1·5–2μ thick, apparently continuous.

(124) **GORGONICEPS CLELANDII** Hansf., n. sp.

Apothecia dispersa vel raro 2-aggregata, turbinata vel brevissime stipitata, sursum cupulata, carnosa, 1–2 mm. diam. et 1·5–2·5 mm. alt., extus flavida vel fulva, margine albo-pruinosa, haud setosa, levia vel longitudinaliter subtiliter striato-rugulosa, deorsum in stipitem brevem obconicam attenuata. Hymenium concavum, margine incurvato circumdatum, flavum vel aureum, leve. Asci leniter clavulati, usque ad 130 × 6–8μ, apice rotundati, inoperculati, deorsum attenuati, 8-spori. Paraphyses numerosae, filiformes, simplices, verisimiliter continuae, apice haud incrassatae, ascos aequantes. Sporae parallelae, filiformes, 45–55 × 2μ, utrinque lenissime attenuatae, continuae, hyalinae, intus granulosae.

Hab. in ligno emortuo, Dorrigo, New South Wales, Jan. 1918, J. B. Cleland, WARI 3125.

Apothecia scattered, or rarely 2-aggregate, turbinate or very shortly stipitate, cupulate above, fleshy, firm, 1–2 mm. diam. and 1·5–2·5 mm. high, the exterior pallid yellow to yellow-brown, becoming white-pruinose around the margin, but not hairy or setose, smooth or finely longitudinally striate to rugulose, contracted below into a short obconic stem portion, without evident mycelium around the base. Hymenium concave, surrounded by the even, rather thick, incurved margin, shallowly cupulate to almost plane in old specimens, from yellow to bright orange, smooth. Asci narrowly clavate, up to 130 × 6–8μ, rounded at the apex, inoperculate, 8-spored. Paraphyses numerous, filiform, simple, doubtfully septate, not enlarged at the apex, equalling the asci; the orange colour of the hymenium is due to the pale yellow coloration of the paraphyses and asci as seen under the microscope, this colour extending throughout the tissues of the apothecium. Spores parallel and often spirally twisted inside young asci, filiform, 45–55 × 2μ, slightly attenuate to 1μ at the rounded ends, with finely granular contents, apparently not becoming septate, quite hyaline.

(125) **HELOTIUM CYATHOIDEUM** (Bull.) Karst., *Bot. Soc. Fauna & Fl. Fenn.*, 11:237, 1871.
On dead wood, Blue Mts., New South Wales, J. B. Cleland, May 1915, WARI 2736.

(126) **HUMARINA ARANEOSA** (Bull. ex Fuckel) Seaver, *N. Amer. Cup-Fungi*, 1:130, 1942.
On sandy soil, National Park, New South Wales, J. B. Cleland, WARI 2755.

Apothecia scattered, stipitate, expanded above and discoid to shallowly cupulate with even margin, sometimes slightly distorted, orange-red outside, the hymenium smooth and orange-red, to 7 mm. diam. and 5 mm. high, the stem portion 3–4 × 1 mm., dilated above and slightly bulbous at the base in the sand, concolorous. Asci cylindric, to 180 × 10–11μ, attenuate below into a long stipe portion, 8-spored, operculate. Spores obliquely 1-seriate, long remaining hyaline but finally becoming brownish, smooth, ellipsoid with the basal end rather more acute than the apex, 15–19 × 6·5–7·5μ. Paraphyses filiform, hyaline, equalling the asci, 2μ thick, not expanded above, straight, septate. The whole texture is firmly fleshy.

(127) HUMARINA SEMIIMMERSA (Karst.) Seaver, *N. Amer. Cup-Fungi*, 1:131, 1928.

On rotting leaves and soil, Mt. Lofty, South Australia, July 1921, J. B. Cleland, WARI 2540.

Apothecia gregarious or scattered, sessile or subsessile, to 10 mm. diam., expanded and shallowly cupulate to almost discoid, pale yellow externally, subfloccose, soft fleshy, with somewhat irregular pale margin. Hymenium dark honey-coloured, concave to almost plane; asci cylindric, up to 250 × 15–20μ, 8-spored, operculate, with long stalk portion which is more or less suddenly contracted into a short foot at the base. Spores 1-seriate, oblique, straight to almost transverse, occasionally 2-seriate in upper part of ascus, ellipsoid, hyaline, quite smooth, 18–20 × 9–11μ. Paraphyses slender, septate, hyaline, slightly yellowish and expanded to 3–4μ at the apex.

(128) HUMARINA CONVEXULA (Pers.) Seaver, *N. Amer. Cup-Fungi*, 1:128, 1942.

On damp soil, R. Tug, Central Australia, Mayo Expedition 1079, June 1953.

(129) LACHNELLA CLELANDII Hansf., n. sp.

Apothecia stipitata, circa 9 mm. alt., apice dilatata, discoidea vel subcupulata, usque ad 5 mm. diam., stipite circa 7 × 0·8 mm.; extus brunnea, setosa; setae usque ad 1000 × 8μ, pluriseptatae, atrobrunneae, rectae, simplices, acutae, subrigidae. Hymenium subcupulatum vel planum, margine tenue regulare circumdatum, leve, luteum, ceraceum. Asci cylindracei, inoperculati, breviter stipitati, apice rotundati, 8-spori, usque ad 150 × 9–11μ. Sporae 1-seriatae, plus minusve obliquae, ellipsoideae, utrinque attenuato-rotundatae, continuae, hyalinae, leves, 15–19 × 5–7μ.

Hab. in terra, National Park, South Australia, July 1925, J. B. Cleland, WARI 2542.

Apothecia stipitate, about 9 mm. in total height, with expanded, shallowly cupulate or subdiscoid apex, up to 5 mm. diam., rather suddenly contracted into a stem about 7 × 0·8 mm.; externally brown and clothed with setae which continue down the stem to soil level. Setae dark brown, up to 1000 × 8μ, acute, simple, stiff, many-septate, suberect; beneath the setae the stem appears loosely white-striate. Hymenium shallowly cupulate to almost plane, surrounded by a very thin, regular margin composed of the thin exterior brown layer of the apothecium, slightly incurved around the hymenium, which is smooth, yellow-brown and waxy. The upper part of the apothecium is soft fleshy-gelatinous, the subhymenium being composed of very pale yellowish, contorted and much interwoven, septate hyphae. Asci cylindric, inoperculate, contracted below into rather short stipe, 8-spored, 150 × 9–11μ. Spores 1-seriate, usually slightly oblique and overlapping, narrowly ellipsoid with attenuate-rounded ends, continuous, quite hyaline, permanently smooth, 15–19 × 5–7μ.

A second collection from the same locality, also by Cleland, May 1926, is preserved at the WARI as no. 2545, growing on wood.

(130) LAMPROSPORA TETRASPORA Hansf., n. sp.

Apothecia gregaria, usque ad 5 mm. diam., cupulata vel subdiscoidea, flavida, carnosa, margine crassa, regulare; extus levia, concolorata. Asci cylindracei, breviter stipitati, usque ad 180 × 17–19μ, operculati, (2)-4-(5)-spori. Sporae 1-seriatae, globosae, hyalinae, leves, 15–17μ diam., grosse 1-guttulatae. Paraphyses numerosae, filiformes, indistincte septatae, circa 2μ cr., apice haud incrassatae.

Hab. in terra, Milson Island, Hawkesbury R., New South Wales, May 1915, J. B. Cleland, WARI 2737.

Apothecia gregarious, sessile, attached by hyphae in the centre of the base only, up to 5 mm. diam., deep yellowish when moistened after drying (possibly orange when fresh), fleshy, rather tough, shallowly cupulate to subdiscoid-expanded, the margin thick, even, fertile. The exterior is smooth and concolorous with the hymenium. Asci cylindric, narrowed below into a short foot, up to 180 × 17–19μ, operculate, mostly 4-spored when mature, a few with 2 or 5 spores, but forming 8 spores at first. Spores 1-seriate, globose to slightly ellipsoid, hyaline, filled with a single large oil globule, quite smooth, rather thin-walled, 15–17μ diam. Paraphyses numerous, filiform, doubtfully septate, not enlarged at apex, about 2μ thick, exceeding the young asci, but the mature asci slightly protruding from amongst them.

(131) **Lamprospora leiocarpa** (Curr.) Seaver, *Mycologia*, 6:21, 1914.

On soil, Mt. Lofty, South Australia, J. B. Cleland, WARI 3137.

Apothecia gregarious or scattered, becoming shallowly cupulate, regular or irregular, 2–3 cm. diam., finally almost discoid, brown to almost black, smooth or somewhat roughened externally. Hymenium smooth or somewhat wrinkled, dark brown to almost black. Asci cylindric, tapered below into a rather long stipe, 8-spored, up to 190 × 10–12μ, operculate. Spores 1-seriate, globose, hyaline, smooth, 8–10μ diam. Paraphyses numerous, often fasciculate and adherent at the apices, filiform, with globose apex swollen to 10μ, pale yellow-brown below, much darker at apex, septate.

(132) **Lamprospora sp.** near *L. constellatio* (B. & Br.) Seaver.

On sandy soil, Mt. Compass, Oct. 1924, J. B. Cleland, WARI 2543; ditto, Encounter Bay, May 1924, J. B. Cleland, WARI 2550.

Apothecia scattered or gregarious, up to 5 mm. diam., coral red outside with darker red hymenium, in old dried specimens the colours fading to uniform dull yellowish-buff, discoid-expanded, very slightly concave when fully mature, about 800μ thick, without distinct sterile margin, the edge rather thick and regular, fertile. Hymenium fleshy in texture; asci cylindric, contracted below into rather short stipe, up to 170 × 20μ, 8-spored, very thin-walled, operculate. Spores 1-seriate, hyaline, permanently smooth, perfectly globose, the wall about 1μ thick, 15–17μ diam. Paraphyses filiform, hyaline, septate, not thickened at apex, with granular contents, often bent to curved near the apex.

(133) **Patella scutellata** (L.) Morgan, *Journ. Mycol.*, 8:187, 1902.

On soil and wood, Katoomba, New South Wales, 1916, J. B. Cleland, WARI 3132.

(134) **Patella sp.** near *P. albo-cincta* (B. & C.) Seaver, *N. Amer. Cup-Fungi*, 1:163, 1942.

On soil, Warri, Oct. 1923, J. B. Cleland, WARI 2536.

Apothecia rather deeply cupulate, up to 10 mm. diam. and 12 mm. high, sessile, indistinctly longitudinally plicate, firm fleshy, dark brown in dried specimens, the colour dissolving on moistening and leaving the moist apothecium orange-brown both externally and internally; the exterior clothed with hyaline hairs forming a short tomentum which does not extend as bristles above the margin; the latter slightly incurved and sterile; hairs up to 150 × 10–12μ wide at base, often suddenly constricted above the base or near the middle and thence gradually attenuate to the narrowly rounded apex (2μ wide), the wall 1·5μ thick, smooth, 2–3-septate. Asci cylindric, up to 300 × 18–20μ, thin-walled, operculate, slightly narrowed below into stipe, 8-spored. Spores obliquely 1-seriate, ellipsoid, 20–25 × 12–14μ, continuous, the wall about 1μ thick, becoming finely verruculose with minute blunt tubercles, quite hyaline.

(135) **Patella sp.** near *P. theleboloides* (Alb. & Schw.) Seaver, *N. Amer. Cup-Fungi*, 1:170, 1942.

On damp hay, Meningie, S. Australia, L. D. Williams, WARI 3492.

Apothecia scattered to closely gregarious, shallowly cupulate, yellow, sessile or contracted below into the rudiment of a stem-like base, smooth, circular to somewhat irregular in outline, up to 2 mm. diam. Exciple concolorous with hymenial disc or slightly more brownish-yellow, smooth, with scattered erect hairs around the margin; cells of outer layer rounded-angulose, thin-walled, yellowish, up to 40μ diam., irregularly arranged. Setae erect-spreading, simple, straight, pale yellow under microscope, yellow-brown under lens, up to 300μ long, gradually attenuate from the base 20μ thick to the simple acute apex, the wall 1–1·5μ thick, smooth, 2–5-septate. Hymenium flat to concave, yellow, the subhymenial tissue slightly more orange-yellow; asci cylindric, rounded at apex, slightly attenuate below into a stipe, 8-spored, up to 230 × 12μ, operculate. Paraphyses filiform, hyaline, 2μ wide, thinly septate, slightly swollen to 4μ at apex, contents hyaline. Spores 1-seriate, ellipsoid, hyaline, perfectly smooth, 14–16 × 9–11μ.

(136) Peziza clypeata Schw. (prox.)

On wood, Mt. Wilson, New South Wales, J. B. Cleland, June 1915, WARI 3141; Hogans Brush, Gosford, N.S.W., J. B. Cleland, WARI 3140.

Apothecia single, discoid to shortly stipitate, becoming widely open with slightly incurved margin, dark brown, drying almost black, 25–50 mm. diam. and 10–20 mm. high, soft fleshy in texture, externally smooth or slightly rugose on under surface, centrally attached to the wood. Hymenium dark brown to almost black when dry, the colour being contained as granules in the paraphyses and soluble to some extent in warm water; smooth, even; asci cylindric but tapered below into a long stipe portion, up to about 400 × 15–17μ, 8-spored, thin-walled, operculate. Spores 1-seriate, cymbiform with rounded ends, hyaline, perfectly smooth with granular contents or 2–3-guttulate, 25–35 × 12–17μ, the wall about 1μ thick. Paraphyses numerous, slightly exceeding the asci and sometimes somewhat agglutinate at their swollen apices (5–7μ), simple, septate, with brownish internal granules.

(137) Peziza sylvestris (Boud.) Sacc. & Trott, *Syll. Fung.*, 22:612, 1913.

On humus under *Pinus*, Mt. Gambier, South Australia, Oct. 1953, H. Lower; not present in the more open parts of the woods.

(138) Peziza sp. near *P. brunneoatra* Desm.

On soil, Mount Lofty, S. Australia, Sept. 1920, J. B. Cleland, WARI 3133.

Apothecia scattered, cupulate, subsessile, up to 10–12 mm. diam. and about 6 mm. high, centrally attached by a short stipe-like portion about 1 mm. long and 2–3 mm. diam., which is enlarged into a bulbous root immediately below the soil surface to 4–5 mm. diam., from which mycelium passes outwards into the soil. Apothecia glabrous, externally brown, fleshy, soft, about 1 mm. thick; hymenium dark brown, smooth, the margin finely crenulate and slightly paler. Asci cylindric, to 280 × 17–18μ, operculate, 8-spored, slightly contracted below into elongate stipe. Spores 1-seriate, ellipsoid, continuous, hyaline, 22–25 × 12–15μ, becoming sparsely and finely verruculose when mature. Paraphyses numerous, brown in mass, simple, clavate-enlarged at the apex to 7μ, covered there with yellow-brown granular matter, the contents also with fine yellowish granules, septate. The contents of mature, shed spores are also sometimes faintly yellow-granular.

(139) Sarcosphaera ammophila (Dur. & Lev.) Seaver, *N. Amer. Cup-Fungi*, 1:333, 1942.

In sand, Mt. Compass, South Australia, J. B. Cleland, Oct. 1924, WARI 3117.

This differs slightly from Seaver's description: the spores become pale yellow-brown when fully mature and have minute scattered tubercles on the surface, measure 14–16 × 9–10μ; paraphyses pale yellow-brown, darker towards the apex, fasciculate and clinging together at the apex, septate.

Also collected by J. B. Cleland in sand at Encounter Bay, S. Australia, Sept. 1924, WARI 3129; and at Narragin, Western Australia, 1926, WARI 3502.

BASIDIOMYCETES.

(140) Puccinia cockaynei Cunn., *Trans. N.Z. Institute*, 54:679, 1923.

On *Gentiana diemensis*, Kosciusko, New South Wales, A. Costin 17, March 1947.

(141) Puccinia euphrasiana Cunn., *Trans. N.Z. Institute*, 55:6, 1924.

On *Euphrasia collina*, Mt. Kosciusko summit, New South Wales, March 1947, A. Costin 16.

This collection contains only the uredo-stage, and no paraphyses were found, so that the determination is rather doubtful.

(143) PUCCINIA HIERACII (Schum.) Mart., *Fl. Mosq.*, p. 226, 1912.

On *Microseris scapigera*, Kosciusko, New South Wales, March 1947, A. Costin 14.

(144) PUCCINIA RUIZENSIS E. Mayor, *Mem. Soc. Neuchatel, Sci. Nat.*, 5:486, 1913.

On *Oreomyrrhus andicola*, Kosciusko, New South Wales, Dec. 1946, A. Costin 5.

(145) PUCCINIA ARTHROCNEMI Hansf., n. sp.

II. Uredosori in caulibus et spicibus dispersi, discoidei, epidermide rupta cincti, aurei, usque ad 0·75 mm. diam., rotundati vel elliptici, pulverulenti. Uredosporae ellipsoideae, fulvae vel aureae, 29–40 × 21–27μ, episporio 2–2·5μ cr., laxe echinulato (–1μ), poris germinationibus 8–13, dispersis, leniter papillatis.

III. Teleutosori pauci, dispersi, usque ad 0·5 mm. diam., rotundati, leniter bullati, atrobrunnei, epidermide rupta cincti. Teleutosporae ellipsoideae vel oblongae, utrinque rotundatae vel apice subpapillatae vel truncatae, leves, sursum castaneae, deorsum pallidiores, 44–60 × 29–40μ; 1-septatae, non vel leniter constrictae; episporio 2–2·5μ cr., apice incrassato usque ad 7μ; pedicello persistente, hyalino vel apice dilute luteo, 50–110 × 7–10μ, collabascente.

X. Mesosporae paucae, teleutosporis commixtae, subglobosae vel ellipsoideae, 35–45 × 25–34μ, apice leniter incrassatae.

Hab. in caulibus et spicibus *Arthrocnemi halocnemoidis*, Eucolo Gorge, Pimba, S. Australia, Dec. 1953, J. B. Cleland, WARI 3699.

The uredosori are scattered on the stems and flowering parts, discoid, surrounded by the broken epidermis, golden brown, up to 750μ diam., rounded or elliptic, pulverulent. Uredospores ellipsoid, yellow to golden brown, 29–40 × 21–27μ, sparsely echinulate to 1μ, the epispore 2–2½μ thick, with 8–13, slightly papillate, paler to hyaline germ pores scattered all over.

Teleutosori few, scattered, up to 0·5 mm. diam., rounded, somewhat bullate, dark brown to black-brown, surrounded by the ruptured epidermis, becoming pulverulent. Teleutospores eventually loosely pulverulent, mixed with a few mesospores but no uredospores, ellipsoid to oblong, rounded at both ends, or the apex somewhat papillate or flat and subtruncate, chestnut-brown above, somewhat paler towards the base, smooth, or in some fluids appearing very finely and indistinctly granulose on the surface, not or very slightly constricted at the septum, 44–60 × 29–40μ; epispore 2-layered, the outer layer 1μ thick, paler than the inner, which is 2–2½μ thick, but thickened around the apex up to 7μ. Germ pore of upper cell apical, of lower just below septum or half-way to the base, and then slightly papillate. Pedicel persistent, hyaline, or with faint yellow tinge at junction with spore, 50–110 × 7–10μ, thin-walled and collapsing.

Mesospores few, similarly coloured to teleutospores and with similar double wall, often slightly thickened around the rounded or flattened apiculate apex, 35–45 × 25–34μ.

(146) TILLETIA SP.

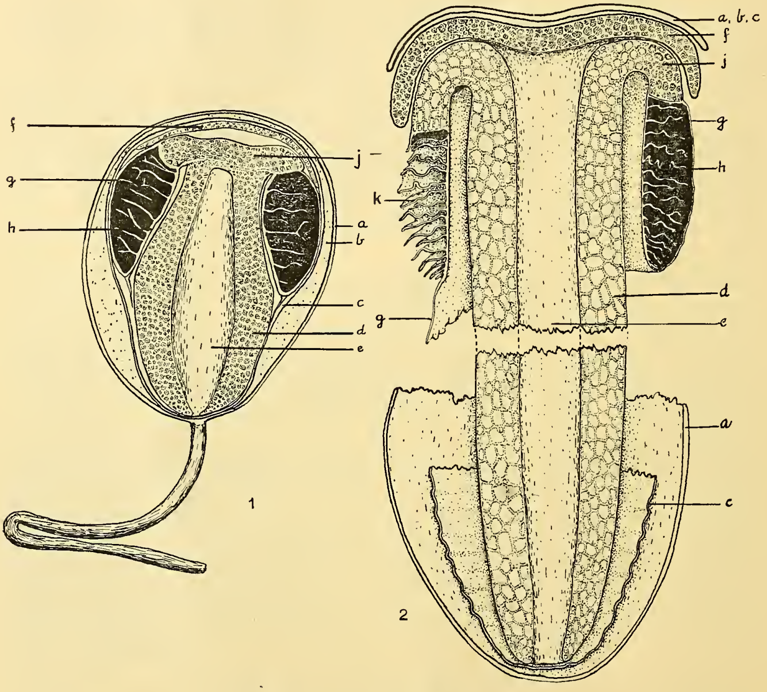
On *Aira caespitosa*, Myponga, South Australia, Jan. 1929, J. B. Cleland, WARI 2000.

Sori in ovaries, remaining enclosed by the outer membrane of the host, which is one cell thick, becoming black and powdery, irregularly dehiscent. Spores dark brown, more or less globose, 18–23μ diam., surrounded by a subhyaline wrinkled-reticulate epispore, the meshes of which are up to 2μ high, so that external spore dimensions are 21–28 × 21–23μ, mostly 22–27μ diam. The reticulations of the exospore are irregular in shape and size, even in fully mature spores, varying from almost hexagonal and about 3μ diam., to elongate or ramose, up to 15 × 2μ, with divisions between them about 2μ thick.

Ex descr. this is not unlike *T. flectens* Lagerh., but which is limited to leaves; there is no infection on the leaves of the present specimen. Germination of the spores could not be obtained, so that even the generic determination is open to doubt, pending further collections for comparison.

(147) **ITAJAHYA HORNSEYI** Hansf., n. sp.

Receptaculum capitatum, stipitatum; stipes 15–20 × 3 cm., cylindraceus, basi attenuatus, extus lacteo-flavidula vel dilutissime puniceus, intus albus, cellulosus, cellulis usque ad 5 mm. diam., concavus, contextus circa 10 mm. cr., apice dilatatus et revolutus, usque ad 10 cm. diam., et pileus ferens. Pileus circa 3–5 mm. cr., discoideus, albus, cellulosus, cellulis 1–3-stratosis, usque ad 2 mm. diam., sursum membrana pallide brunnea viscidula, facile secedente vestitus. Gleba ex apice dilatato stipitis dependens, annulata, circa 5–8 mm. cr. et usque ad 50 mm. alt., foetida, primo nigra, in expanso viride demum grisea, deliquescens et laminas imbricatas tramatis relinquens. Basidia 8-spora. Sporae sessiles, subhyalinae, ellipsoideae, leves, continuae, 5 × 2–2·5μ, episporio tenui, massam mucilaginosam, virideo-griseam efformantes.



Figures 1, 2. *Itajahya hornseyi.*

1, Vertical section through unexpanded plant, ×1. 2, Vertical section through expanded plant ($\times {}^4/_3$), showing on right the gleba prior to dehiscence, on left, the gleba after spore dispersal.

a, Exoperidium; *b,* mesoperidium, mucilaginous; *c,* endoperidial membrane; *d,* stipe, showing cellular structure; *e,* central cavity of stipe; *f,* pileus, with cellular structure; *g,* outer membrane of gleba; *h,* inner membrane of gleba, bearing the tramal plates (*k*); *j,* expanded stem apex, in Fig. 1 slightly off centre.

Hab. in terra, Cadell, R. Murray, South Australia, April 1954, E. Hornsey, WARI 3732.

The fungus originates from the usual type of "egg" of the Phallaceae, buried just beneath the surface of the sandy soil habitat, smooth, subglobose to obovate, brownish

to umber in colour, membranous, 4–5 cm. diam. and 4–7 cm. long, with a long basal rhizomorph extending from the centre of the base deeper in the soil; in the only specimen seen this rhizomorph was brown, 15 cm. long by 4 mm. diam., smooth, rather tough, flexible, composed of parallel hyphae with little differentiation between the surface layer and interior, save that it is white internally. In longitudinal section (Fig. 1) the peridium is seen to consist of three layers, the outer a rather thick membrane of closely agglutinated hyphae, the meso-peridium soon degenerating into a watery mucilage, with some trace of areolae formed by the remains of the original hyphae, and an inner, white, smooth membrane more or less closely adherent to the receptacle inside, composed of more or less closely agglutinated hyaline hyphae, many of which are swollen at the septa, very thin-walled. The receptacle prior to expansion consists of a central slightly ellipsoid, hollow stem, somewhat expanded and recurved at the apex, narrowed at the base, of minutely cellular structure, and covered over the apex with a rounded, thin, separate discoid pileus. Around the edges of the expanded stem apex depends the annular gleba, enclosed in a thin membranous sheath, consisting of numerous, more or less horizontal, folded thin tramal plates, on which the basidia are formed, traversing the solid black spore mass. At maturity (Fig. 2) the stem of the receptacle elongates within 2–4 hours, bursting the peridium by an irregularly circular fissure around the edge of the pileus, carrying the upper portion of the peridium into the air as a membranous covering over the pileus; this covering is quite loose and has a rather ragged edge, soon becoming detached from the pileus itself, especially in rain storms. The surface of the pileus is smooth and creamy white, and when expanded it consists of 1–3 layers of small cells, similar to those of the expanded stem. The pileus is held to the stem apex merely by soft mucilage, and is easily detached as a disc, somewhat incurved over the edge of the expanded stem-apex. The expanded stem is up to 20 cm. long by about 3 cm. diam., cylindric above the slightly attenuated and thinner base, traversed by a central canal about 1 cm. diam., smooth inside, the tissue of cellular structure, quite soft, the cells up to 5 mm. diam., in several layers. The apex is expanded into a recurved disc portion, the flat, free edge bearing the annular gleba, which hangs down for a distance of up to 50 mm. around the stem, from which it is quite free, and at first is enclosed within a delicate surface membrane. On the inner surface next the stem this membrane is somewhat thicker and tougher, and bears the more or less horizontal, imbricate, white tramal plates; the latter remain more or less intact after the dispersal of the spore mass. The outer part of the covering membrane splits irregularly, often near the attachment to the stem apex, and may for a time hang down around the base of the exposed gleba, but normally disappears rapidly. The exposed spore mass is green in colour, soon darkening to almost black, and in the fresh state bears numerous droplets of water. The basidia bear star-like groups of usually 8 spores each; the spores individually are subhyaline to faintly grey in colour, sessile, ellipsoid, smooth, thin-walled, $5 \times 2–2 \cdot 5\mu$, the epispore slightly mucilaginous. The basidia themselves are rather ephemeral, collapsing immediately after spore formation, but the clusters of spores tend to hang together on the apex of the collapsed basidium. The tramal plates are at first irregularly folded, but expand and separate as spore discharge occurs, their somewhat loose and ragged edges finally giving a very rough appearance to the surface of the gleba. The latter has a very objectionable odour of rotting cheese, quite characteristic of this species, and very different from the foetid smell of other Phallaceae.

This is the first record of this genus in Australasia, it having previously been recorded from South America, Egypt and Palestine.

FUNGI IMPERFECTI.

(148) Phyllosticta alyxiae Hansf., n. sp.

Maculae nullae; pycnidia epiphylla, rarius etiam hypophylla, dispersa, nigra, subglobosa vel lenticularia, usque ad 300μ diam. et 200μ alt., primo subepidermalia, demum epidermidem elevatam circulariter disrumpentia et late aperta. Paries pycnidii

parenchymaticus, circa 30–40μ cr., atrobrunneus, intus hyalinus. Sporophora stipata, erecta, hyalina vel flavidula, continua, simplicia, 15–20 × 2–3·5μ. Sporae acrogeneae, singulae, cylindraceae, apice rotundatae, basi lenissime truncato-apiculatae, plerumque rectae, hyalinae, continuae, leves, eguttulatae, 15–17 × 3–4μ.

Hab. in foliis subvivis *Alyxiae buxifoliae*, Sandringham, Victoria, Aug. 1900 (? leg. D. McAlpine), WARI 3729 ex Herb. Dept. Agr. Victoria.

Leafspots none; the pycnidia are scattered evenly over the dying or dead tissues of the host leaf, usually epiphyllous but sometimes amphigenous, black, globose to lenticular, up to 300μ diam. and 200μ high, showing through the elevated epidermis as shining black spots, eventually bursting the epidermis, often circularly, and becoming widely open like an acervulus. Wall of several layers of subopaque dark brown parenchyma, 30–40μ thick all round the loculus, lined with lighter and thin-walled parenchyma, opening at the apex by an irregularly rounded pore, and later more widely. Conidiophores forming a close palisade on the base and lower part of the sides of the pycnidium, erect, hyaline to yellowish, continuous, simple, 15–20μ long, forming spores singly at the apex. Spores cylindric, hyaline, continuous, smooth, thin-walled, not guttulate, the apex broadly rounded, the base slightly truncate-apiculate, usually straight, 15–17 × 3–4μ.

(149) PHYLLOSTICTA CONFUSA Bubak in Tranzschel & Serebr., *Mycoth. Ross.* no. 330, 1912, et in *Hedwigia*, 57:339, 1916.

On *Atriplex elachophyllus*, Ooldea, South Australia, Aug. 1922, G. Samuel, WARI 1996.

This specimen differs from the original description in not causing definite leafspots, the whole leaf being turned yellow, and the pycnidia scattered over it. Pycnidia epiphyllous, immersed, black, punctiform, membranous, to 200μ diam., glabrous, flattened-globose, about 120μ high; wall of several layers of brown, angular cells enclosing an inner layer of hyaline cells 8–10 × 2–4μ, projecting as a palisade into the loculus and forming conidia direct on their apices; the whole wall 20–30μ thick, thicker around the apex (–40μ) and pierced by a round pore 10–15μ diam. Pycnospores exceedingly numerous, filling the whole loculus, hyaline, bacterioid, slimy, adherent in loose masses, straight with rounded ends, continuous, 2–4 × 1–1·5μ, eguttulate, smooth, extruded as a white tendril or mass.

(150) ASCOCHYTA SP. near *A. graminicola* Sacc.

On dead leaves *Stipa* sp., Meningie, South Australia, L. D. Williams, WARI 3489 p.p.

Pycnidia scattered, not on leafspots, punctiform, black, depressed-globose, 80–90μ diam., with apical pore, glabrous; wall membranous, of a single layer of brown, angular cells with some traces of linear arrangement, darker around the apex, lighter below, 5–8μ diam. Conidiophores not seen. Conidia subfusoid, usually straight, widest in the middle, slightly attenuate towards both rounded ends, hyaline, smooth, 1-septate in middle, not constricted, 8–13 × 2·5–3·5μ; older spores tend to become greenish-hyaline and the contents sometimes divided into three parts, thus appearing indistinctly 2-septate. These spores are smaller than those described by Grove (*British Coelomycetes*, 1:343, 1935) as 10–15 × 3–4μ.

(151) ASCOCHYTA HETERODENDRI Hansf., n. sp.

Maculae amphigenae, usque ad 3 mm. diam., primo brunneae atro-marginatae, demum cinerescentes. Pycnidia nigra, immersa vel suberumpentia, punctiformia, plus minusve globosa, glabra, levia, usque ad 140μ diam., dispersa vel 2–3-aggregata, sursum leniter papillata; paries membranaceus, pluristratosus, dilute olivaceus, intus hyalinus. Sporophora erecta, stipata, simplicia, continua, usque ad 12 × 3μ, hyalina. Conidia acrogenea, hyalina, cylindracea, apice rotundata, basi lenissime attenuato-truncata, 1-septata, haud constricta, levia, recta vel curvula, 10–15 × 2·5–3μ.

Hab. in foliis *Heterodendri alnifolii*, Ooldea, Aug. 1922, G. Samuel, WARI 1987.

Leafspots amphigenous, to 3 mm. diam., at first brown with darker marginal line, finally becoming cinereous and slightly rugulose with the suberumpent pycnidia.

Pycnidia black, punctiform, subepidermal, more or less globose, glabrous, smooth, up to 140μ diam., single or 2–3-aggregate and subconfluent; wall little differentiated from the surrounding mycelial hyphae save by slightly darker colour, membranaceous, of several layers of pale olivaceous cells, lined with other hyaline layers, the innermost bearing a close palisade of conidiophores. The pycnidia are surrounded outside by a loose plectenchymic stroma of hyaline hyphae, extending downwards between the palisade cells and then dissolving into loose hyphae in the mesophyll. Conidiophores erect, closely crowded, simple, continuous, up to 12 × 3μ, forming single apical conidia. Conidia hyaline, cylindric, straight or bent, rounded at the apex, slightly attenuate-truncate at the base, 1-septate, not constricted, smooth, 10–15 × 2·5–3μ.

(152) ASCOCHYTA VERBENAE Siem., *Bull. Mus. Caucasie, Tiflis*, 12, extr. p. 4, 1919.

On dying stem of *Verbena* sp., Meningie, South Australia, L. D. Williams 23.

Pycnidia subepidermal, with punctiform ostioles, globose, black, membranous, smooth, up to 90μ diam. Wall parenchymatous, of a single layer of brown angular cells, darker around the apical pore, which is 15–20μ diam. Pycnospores single and acrogenous on short conidiophores lining the loculus; oblong with obtuse ends, straight or slightly bent, hyaline, thin-walled, becoming 1-septate and sometimes slightly constricted in the middle, 8–12 × 3–3·5μ.

(153) CONIOTHYRIUM SP.

On dead leaf *Stipa* sp., Meningie, South Australia, L. D. Williams, WARI 3489 p.p.

Pycnidia scattered, not on leafspots, minute, punctiform, immersed, black, globose to somewhat flattened, about 80μ diam. and 60–70μ high, the ostiole scarcely protruding, merely reaching the leaf surface and pierced by a round pore about 15μ diam.; wall smooth, membranaceous, glabrous, parenchymatous, olivaceous, darker brown around the apex, about 5μ thick, consisting of angular cells in 1–2 layers, 7–9μ diam., lined with a hyaline inner layer, which forms the conidia on the inner surface; conidiophores not evident. Conidia soon becoming chestnut-brown, oblong with rounded ends, continuous, smooth, 6–8 × 5–6μ, the wall about 1μ thick, contents clear, not guttulate.

This appears to be close to *C. fuegiana* Speg., described on rotting leaves and culms of *Poa* spp., South America, but no authentic material of this has been available for comparison.

(154) STAGONOSPORA ACACIAE Hansf., n. sp.

Pycnidia primo singulariter dispersa, demum laxe aggregata, in areolas pallidibus indeterminatas, plerumque epiphylla, immersa, atra, levia, membranacea, usque ad 400μ diam. et 250μ alt.; paries sursum opace atrobrunneus, pluristratosus, parenchymaticus, deorsum pallidior et tenuior, cellulis rotundato-angulosis, circa 10 × 8μ, apice poro circa 15μ diam. pertusus. Sporophora stipata, simplicia, hyalina, continua, circa 15 × 3–4μ. Pycnosporae singulariter acrogeneae, rectae vel curvulae, utrinque rotundatae, leves, 2–3-septatae, haud constrictae, 18–24 × 3·5–4·5μ.

Hab. in foliis *Acaciae elatae*, Burragorang Valley, New South Wales, L. Fraser, Feb. 1953.

Pycnidia at first single, then loosely grouped, on indefinite pale areas of the leaf, amphigenous, mostly epiphyllous, completely immersed in the leaf, with the ostiole and terminal pore opening through the epidermis, becoming slightly raised above the level of the leaf when fully mature. The pycnidia occupy the upper half of the leaf thickness when epiphyllous, and force aside the remains of the palisade tissue, remaining quite separate; there is a faint reddish tinge in the contents of the conidiophore layer and the young conidia, not apparent when these are mounted separately. Pycnidia black around the apex, smooth, glabrous, thin-walled, up to 400μ diam. and 250μ high; the wall in the upper part opaque dark brown, of several layers of parenchyma, becoming paler to hyaline, and thinner below; the wall cells rounded-polygonal, about 10 × 5μ; opening by an apical pore about 15μ diam. The loculus in the lower part is filled with a rather loose fibrous tissue, which on its plane or somewhat folded upper surface bears a palisade of erect, short, simple, continuous, hyaline sporophores, about 15 × 3–4μ, projecting into the loculus and abstricting single spores from their free ends. Conidia hyaline, cylindric or sometimes slightly clavulate, straight or slightly bent, the ends rounded, smooth, 2–3-septate when mature, not constricted, 18–24 × 3·5–4·5μ.

(155) STAGONOSPORA ATRIPLICIS Lind., *Danish Fungi*, p. 444.

On *Chenopodium murale*, Meningie, June 1953, L. D. Williams 17.

Leafspots scattered, yellow-brown, becoming almost white, circular to rather irregular, smooth, with definite margin and indefinite zones outside, up to 3 mm. diam., or sometimes confluent and larger; on lower surface similar, but the centre rather smaller and more indistinct. Pycnidia, loosely scattered or in crowded groups, epiphyllous, immersed, black, 70–150μ diam., globose, smooth, glabrous, the ostiole not projecting beyond the leaf surface; wall surrounded by loose mycelial hyphae, of 1–2 layers of pale brown parenchyma 5–8μ diam., darker around the circular apical pore which is about 15μ diam. Pycnospores issuing in white masses, not tendrils, cylindric, obtuse at both ends, from almost straight to slightly flexuous, hyaline, smooth, thin-walled, at first pluri-guttulate, then with 1–3 septa, 15–30 × 3–5μ, not constricted; the largest spore seen was 48 × 5μ with 5 septa.

The *Ascochyta* form of this was collected in the same locality on *Atriplex muelleri*, L. D. Williams 22.

Pycnospores 15–22 × 4–5μ, pale yellowish in mass, cylindric with rounded ends, 1-septate and rarely slightly constricted, hyaline.

(156) STAGONOSPORA GREVILLEAE Hansf., n. sp.

Maculae usque ad 15 × 1 mm., griseae, leves, atro-marginatae. Pycnidia dispersa, nigra, depresse-globosa, usque ad 400μ diam., subepidermalia, glabra; paries usque ad 15μ cr., pluristratosus, atrobrunneus, in maturitate irregulater et lateque aperta. Pycnosporae sessiles, cylindraceo-fusoideae utrinque rotundatae, plerumque rectae, hyalinae, leves, (4)-7-(8)-septatae, haud constrictae, 40–50 × 8–9μ.

Hab. in foliis *Grevilleae juncifoliae*, Ooldea, Aug. 1922, G. Samuel, WARI 2078.

Leafspots up to 15 mm. long and 1 mm. wide, usually along the margins of the linear leaves, grey, smooth, with narrow dark brown marginal line. Pycnidia epiphyllous, scattered, black, flattened-globose, up to 400μ diam., formed in or below the epidermis and covered by the thick cuticle and remains of the epidermal cells, the latter filled with the black pseudoparenchyma of the pycnidial wall, which is continued downwards around the sides and base of the loculus as a multi-layered wall up to 15μ thick, the outside smooth and glabrous. There appears to be no definite apical pore and the developing pycnidium raises the cuticle and epidermal remains, finally throwing these off, often by a peripheral fissure and then opening irregularly and widely. The spores appear to be formed directly on the inner face of the wall of the base of the pycnidium, with no elongate sterigmata or sporophores; spores cylindric-fusoid with rounded ends, usually straight, hyaline, smooth, transversely (4)-7-(8)-septate, 40–50 × 8–9μ, the epispore two-layered; the outer layer thin and smooth, the inner about 1μ thick and more refringent, similar to the cross-septa, and often constricted slightly at these.

The pycnidial construction verges towards Leptostromataceae.

(157) HENDERSONIA AUSTRALIENSIS Hansf., n. sp.

Pycnidia dispersa vel subaggregata, haud connata, nigra, punctiformia, immersa, 80–120μ diam., 50–60μ alt., depresso-globosa, glabra; ostiolum epidermidem folii perforans, obtuse conoideum, pertusum; paries aurantiaco-brunneus, 2–4 stratosus, parenchymaticus, cellulis plus minusve compressis, intus hyalinus, conidiiferus. Conidiophora bacillaria, hyalina, recta, simplicia, continua, usque ad 15 × 1μ. Conidia acrogenea, singula, late fusoidea, castanea, utrinque attenuata, apice rotundata, basi leniter truncata, 15–18 × 6·5–9μ, transverse 3-septata, haud constricta, episporio dense atro-verruculoso, in medio 1·5–2μ cr., utroque tenuiore.

Hab. in foliis emortuis *Stipae* spec. indet., Meningie, South Australia, L. D. Williams, WARI 3489 p.p.

Pycnidia closely scattered or few-aggregate but not confluent, not on leafspots, black, punctiform, immersed with the obtusely conoid ostiole piercing the epidermis but scarcely protruding, 80–120μ diam., 50–60μ high, flattened-globose, glabrous; wall golden-brown, of several layers of flattened, rather thin-walled, angular parenchyma, lined by one or two layers of hyaline thin-walled cells, on the inner surface bearing erect, straight, simple, continuous, hyaline conidiophores, up to 15 × 1μ. Conidia apical, single, wide fusoid, attenuate towards both ends, the apex rounded, the base subtruncate, chestnut-brown when mature, transversely 3-septate, not constricted, 15–18 × 6·5–9μ, the epispore closely dark-verruculose, 1·5–2μ thick in the middle of the spore, thinner towards each end.

(158) HENDERSONIA EUCALYPTORUM Hansf., n. sp.

Maculae amphigenae, usque ad 1·5 mm. diam., dilute griseae, linea purpurea conctae, rotundatae, numerosae, interdum confluentes. Pycnidia amphigenea, subepidermalia, punctiformia, nigra, globosa, leves, usque ad 120μ diam., laxe dispersa; paries atrobrunneus, membranaceus, strato externo ex cellulis polygonalibus 8–10μ diam. composito, strato interno ex cellulis hyalinis conidiiferis composito; apice poro rotundato 10μ diam. pertusus. Pycnosporae olivaceae, cylindraceae, rectae vel curvulae, basi subtruncatae, apice attenuato-rotundatae, transverse 3-septatae haud constrictae, 40–48 × 5–6μ; episporio circa 1μ cr., dense subtiliterque atro-granuloso.

Hab. in foliis juvenilibus *Eucalypti leucoxyli*, Clare, South Australia, Aug. 1922, T. Osborn, WARI 2007.

Leafspots amphigenous, showing on both sides of the leaf, up to 1·5 mm. diam., pale grey, surrounded by a purple marginal line, numerous and sometimes confluent, rounded. Mycelium of subhyaline, septate, ramose hyphae, penetrating the whole thickness of the leaf. Pycnidia 2–5 on one side of each leafspot, amphigenous, subepidermal, minute, black, globose, smooth, up to 120μ diam.; wall dark brown, membranous, of an outer layer of polygonal cells 8–10μ diam., enclosing an inner layer of hyaline cells which form the spores direct on their inner surface; apical pore not projecting, about 10μ diam. Pycnospores olivaceous, cylindric, straight or slightly bent, the base subtruncate, the apex attenuate-rounded, transversely 3-septate, not constricted, 40–48 × 5–6μ; epispore about 1μ thick, closely and finely dark-granulose on the surface.

(159) HENDERSONIA FRASERI Hansf., n. sp.

Maculae amphigenae, rotundatae, usque ad 2 mm. diam. vel in confluendo irregulares, centro arescentes, albidae, margine atro-rufae. Pycnidia amphigenea, immersa, dispersa, nigra, globosa, usque ad 120μ diam., glabra; paries tenuis, deorsum subhyalinus, sursum 2–3-stratosus, atrobrunneus, apice poro rotundato 5–10μ diam. pertusus. Pycnosporae in sterigmatibus minutis singulariter acrogenae, ellipsoideae vel lenissime clavulatae, apice rotundatae, basi subtruncatae, atrobrunneae, leves, 3-septatae, haud constrictae, 25–28 × 6–9μ, rectae vel curvulae, episporio circa 1·5μ cr.

Hab. in foliis *Eucalypti* spec. indet., Molong, New South Wales, L. Fraser, Aug. 1950; in foliis *E. polyanthemis*, Kosciusko, N.S.W., A. Costin 201, July 1949.

Leafspots amphigenous, rounded, to 2 mm. diam. or confluent and irregular, the centre drying out to whitish and surrounded by a dark red border. Pycnidia amphigenous, totally immersed and scarcely visible, the ostiolar pore barely reaching the leaf surface, few in each leafspot, scattered, black, globose, to 120μ diam., glabrous; wall thin and subhyaline in the lower part, where it is somewhat indistinct, in the upper half composed of 2–3 layers of black parenchyma, pierced at the apex by a pore 5–10μ diam. Pycnospores formed on minute apiculate projections from the cells of the lining layer of the wall, single and terminal, ellipsoid to somewhat clavulate, becoming dark brown, the apex rounded, the base with a slightly truncate hilum, becoming transversely 3-septate, not constricted, smooth, 23–28 × 6–9μ, straight or slightly bent, the wall about 1·5μ thick.

The internal mycelium consists of subhyaline intercellular septate hyphae, penetrating the whole mesophyll and killing the cells, which contain a reddish-brown amorphous substance.

(160) HENDERSONIA LONGISTRIATA Hansf., n. sp.

Pycnidia dispersa vel 2–3-aggregata et subconnata, depresso-globosa vel lenticularia, nigra, punctiformia, usque ad 150μ diam., apice primo poro minuto pertusa, demum late aperta. Paries lente membranaceus, atrobrunneus, 2-stratosus, parenchymaticus, cellulis 5–9 × 5μ, polygonalibus. Conidiophora non visa. Pycnosporae cylindraceae, apice rotundatae, basi truncatae, castaneae vel aureo-brunneae, 3-septatae, subinde lenissime constrictae, 13–19 × 4–5μ; episporio circa 1μ cr., extus longitudinaliter striato-sulcato. Pycnidia primo immersa, demum epidermide fisso subsuperficialia, glabra.

Hab. in culmis emortuos *Graminearum* spec. indet., Meningie, South Australia, L. D. Williams, WARI 3540.

Pycnidia at first completely immersed, but breaking through the raised epidermis and becoming almost superficial when mature, scattered or in small close groups and then almost connate, usually circular in outline, up to 150μ diam., in section flattened-globose to lenticular, black, punctiform, with minute apical pore, at length splitting more widely open. Wall tough membranous, dark brown, composed of two layers of thin-walled polygonal cells, 5–9 × 5μ, enclosing a hyaline layer of thin-walled, compressed cells. Conidiophores not evident. Conidia cylindric with rounded apex and truncate base, becoming chestnut-brown to golden-brown, 3-septate, sometimes slightly constricted at all septa, 13–19 × 4–5μ; epispore about 1μ thick, with about 8 very shallow longitudinal ridges the whole length of the spore.

(161) HENDERSONIA PRUNI Died., *Krypt.-Fl. Brandenb.*, 9:658, 1914.

On old prunings of *Prunus armeniaca*, Nuriootpa, South Australia, Hansford, WARI 3572.

Pycnidia scattered, covered by the swollen epidermis and becoming slightly erumpent at the apex, with apical round pore, globose to somewhat flattened, up to 450μ diam., black, glabrous. Wall of dark brown angular parenchyma in 2–3 layers, tough membranous when moist, lined with 2–3 layers of hyaline cells, the innermost forming conidia on very short sterigmata, the conidia appearing almost sessile. Conidia oblong-cylindric to somewhat ovate, the ends rounded, becoming yellow-brown and then darker, at first 1-septate, then 2–3-septate, not usually constricted, quite smooth, 10–14 × 4–5μ.

(162) HENDERSONIA TRIODIAE Hansf., n. sp.

Pycnidia immersa, seriata, globosa vel subirregularia, discreta, usque ad 150μ diam. et 100μ alt.; paries levis, pluristratosus, parenchymaticus, usque ad 15μ cr., brunneus, ostiolo erumpente leniter papillato, perforato; sub epidermide folii orta, cellulis epidermidis illis nigris opacis fungi impletis. Sporophora hyalina, cylindracea, simplicia, continua, circa 7 × 2–3μ. Sporae singulae, acrogeneae, hyalinae demum dilute olivaceae, fusoideae, rectae vel curculae, apice attenuato-rotundatae, basi rotundatae vel subtruncatae, leves, 3–5-septatae, haud constrictae, 20–35 × 5–7μ.

Hab. in foliis *Triodiae irritantis*, Meningie, South Australia, L. D. Williams, June 1953.

Pycnidia immersed, forming lines along the leaf, globose to somewhat irregular, separate, up to 150μ diam. and 100μ high, developed below the epidermis, which is filled with a black, opaque, clypeal tissue. Wall smooth, of several layers of compressed brown parenchyma, up to 15μ thick, with slightly papillate, erumpent ostiole, with apical pore. Locule lined with short simple conidiophores, hyaline, cylindric, continuous, up to 7 × 2–3μ, each bearing a single apical spore. Spores hyaline, becoming pale olivaceous, fusoid, straight or slightly bent, rounded-attenuate at the apex, rounded or subtruncate at the base, smooth, thin-walled, transversely 3–5-septate, not constricted, 20–35 × 5–7μ.

(163) Camarosporium myopori Hansf., n. sp.

Maculae amphigenae, usque ad 12 mm. diam., aridae, cinereae, atro-marginatae, leves. Pycnidia dense circinatim dispersa, immersa, globosa, glabra, usque ad 200μ diam., nigra; paries pycnidii crasse membranaceus, atrobrunneus, subopacus, 3–5-stratosus, ex cellulis polygonalibus 10μ diam. compositus, intus hyalinus et conidiiferus. Sporophora nulla. Pycnosporae atrobrunneae, subglobosae, ellipsoideae vel clavulatae, transverse 1–4-septatae, longitudinaliter aut oblique 1-septatae, haud constrictae, 10–18 × 5–10μ, apice late rotundatae, basi lenissime apiculatae vel truncatae, leves.

Hab. in foliis *Myopori platycarpi*, Henley Beach, South Australia, July 1922, G. Samuel, WARI 2003.

Leafspots showing on both sides of the leaf, up to 12 mm. diam., dry cinereous with raised black-line margin, smooth, with closely scattered or indefinitely circinate pycnidia. Pycnidia immersed, black, punctiform, globose, glabrous, up to 200μ diam., with apical round pore about 25μ diam., slightly projecting owing to shrinkage of host tissue; wall rather thickly membranous, dark brown, subopaque, of 3–5 layers of polygonal dark brown cells about 10μ diam., lined with a hyaline conidiiferous layer. Sporophores none. Pycnospores dark brown, smooth, from subglobose to ellipsoid, or clavate, with 1–4 transverse septa and one longitudinal or oblique septum in one or more cells, not constricted, 10–18 × 5–10μ, the apex broadly rounded, the base very slightly apiculate or subtruncate.

(164) Camarosporium salicorniae Hansf., n. sp.

Pycnidia subepidermalia, dense dispersa, atra, globosa, 100–140μ diam. et alt., levia, membranacea, apice poro rotundato 10–15μ diam. pertusa; paries pycnidii 5–10μ cr., translucente melleus, 2-stratosus, ex cellulis angulosis 5–12μ diam., fortiter compressibus compositus, apice atrobrunneus. Pycnosporae subglobosae vel late ovatae, olivaceae, 17–25 × 12–15μ, leves, transverse 3-(4)-septatae et longitudinaliter 1–2-septatae, subinde leniter constrictae.

Hab. in ramulis subvivis *Salicorniae australis*, Eucolo Gorge, Pimba, South Australia, Dec. 1953, J. B. Cleland, WARI 3700.

The pycnidia are closely scattered on the older parts of the stems, not causing apparent damage, black, globose, 100–140μ diam. and high, with the apical pore penetrating the dead epidermis, but without clypeus or stroma, smooth, glabrous, membranous. Pycnidial wall 5–10μ thick, pale translucent honey-brown, darker around the apex, consisting of 2 layers of angular parenchyma 5–12μ diam., much flattened, enclosing an indistinct layer of hyaline cells on which the spores are apparently borne direct. Spores at first subglobose, becoming widely ovate, olivaceous-brown, 17–25 × 12–15μ, smooth, transversely 3, or more rarely 4-septate, with most cells 1–2-longitudinally septate, sometimes the older spores having somewhat swollen cells and then slightly constricted at the septa.

The same fungus also occurred in small quantity on *Arthrocnemum halocnemoides*, growing close by.

(165) Camarosporium samueli Hansf., n. sp.

Pycnidia amphigenea et caulicola, dispersa, nigra, punctiformia, globosa, usque ad 140μ diam., glabra, haud prominentia; paries pycnidii membranaceus, 10–12μ cr., 2–3-stratosus, extus parenchymaticus, ex cellulis polygonalibus compressibus, fulvis vel dilute olivaceis compositus, apice poro rotundato 10–18 diam. pertusus. Pycnosporae atrobrunneae, ellipsoideae, utrinque late rotundatae, leves, transverse 5–7-septatae et longitudinaliter 2-septatae, in medio leniter constrictae, 20–25 × 12–14μ.

Hab. in foliis subvivis et in caulibus *Salsolae kali*, Henley Beach, South Australia, July 1922, G. Samuel, WARI 2005.

Not causing leafspots, the pycnidia scattered over the old leaves and also on indefinite greyish areas of the stems; on the leaves amphigenous, punctiform, black, globose, up to 140μ diam., glabrous, not projecting from the host tissue; pycnidial wall membranous, pale olivaceous to yellowish (the black colour of the mature pycnidia

being due to the dark spores filling the loculus), 10–12μ thick, of 1–2 outer layers of flattened polygonal cells 8–10μ diam., enclosing an inner hyaline layer of conidiiferous cells; apical pore round, 10–18μ diam., piercing the epidermis. Spores formed directly on the lining cells of the pycnidium, ellipsoid, at first pale olivaceous, becoming dark brown, smooth, transversely 5–7-septate when mature and usually with 2 longitudinal septa in the larger cells, often slightly constricted at the middle septum and then looking exactly like ascospores of *Pleospora*, 20–25 × 12–14μ.

(166) CAMAROSPORIUM SP. INDET.

On old stems of *Suaeda australis*, Meningie, South Australia, L. D. Williams, WARI 3490, p.p.

Pycnidia scattered or loosely gregarious, immersed, globose to depressed, about 150μ diam., black, punctiform, with papillate, erumpent ostiole pierced by a round pore. Wall thinly membranous, of dark brown angular cells, paler towards the base, in 1–2 layers. Conidiophores not evident. Spores mostly ovate to subpiriform, honey-brown, smooth, transversely 3-septate, with 1 longitudinal septum in the two central cells, 12–15 × 6–8μ.

(167) SEPTORIA CARPHOLOBI Hansf., n. sp.

Maculae cinereae vel griseae, indeterminatae, orbiculares. Pycnidia epiphylla, punctiformia, dense irregulariterque dispersa, immersa, nigra, circa 80μ diam.; membranacea, glabra; paries parenchymaticus, 1–2-stratosus, cellulis 6–10 × 4–7μ, sursum atrobrunneus, deorsum pallidior vel subhyalinus. Sporophora non visa. Sporae hyalinae, filiformes vel cylindraceae, rectae vel curvulae, utrinque obtuse rotundatae vel basi subtruncatae, leves, plerumque 2-septatae, 30–50 × 3μ.

Hab. in foliis subvivis *Carpholobi aequilateri*, Meningie, South Australia, L. D. Williams, WARI 3527, p.p.

Leafspots ashen to grey, indefinite, rounded, with numerous pycnidia on upper surface, which soon extend into the dying tissues around. Pycnidia punctiform, closely and irregularly scattered, immersed, appearing black, about 80μ diam.; under microscope greenish-brown, membranous, darker around the apical pore, smooth; wall of parenchymatous cells irregularly arranged and angulose, 6–10 × 4–7μ, in 1–2 layers, paler to subhyaline towards the base of the pycnidium. Sporophores not seen. Spores hyaline, filiform to cylindric, straight or slightly bent, the ends obtusely rounded or the base subtruncate, smooth, mostly 2-septate, 30–50 × 3μ, very slightly attenuate towards the ends.

(168) SEPTORIA GERANII Rob. & Desm., *Ann. Sci. Nat.*, 20:93, 1853.

On leaves of *Geranium pilosum*, Kosciusko, New South Wales, A. Costin 174.

Leafspots indefinite, with reddish surrounding area, drying out to pale brownish in the centre, irregular and often confluent. Pycnidia amphigenous, mostly hypophyllous, black, at first completely immersed, then by enlargement elevating the epidermis and becoming almost superficial, though still covered by the epidermis, which is joined to the pycnidial wall around the upper part. Pycnidia black, soft membranous-fleshy, up to 200μ diam. and high, with terminal pore about 30–40μ diam.; wall parenchymatous, about 10μ thick in lower part, thicker around apex and passing at the sides into subhyaline to pale olivaceous mycelial hyphae 3μ thick, branched and interwoven, septate, intercellular in mesophyll; wall of 2–4 layers of olivaceous parenchyma, soft, lined with a close palisade of simple fusiform conidiophores 10–18 × 3μ, slightly attenuate towards both ends, continuous, straight or bent, hyaline, forming single conidia at the apex. Conidia hyaline, filiform with rounded ends, 30–50 × 1–1·5μ, smooth, bent to much curved, indistinctly 3-septate.

(169) SEPTORIA GERBERAE Syd., *Ann. Mycol., Berlin*, 10:43, 1912.

On *Gerbera jamesonii*, Meningie, S. Australia, June 1953, L. D. Williams 48.

(170) SEPTORIA PELARGONII Syd., *l.c.* 10:443, 1912.

On *Pelargonium australe*, Meningie, S. Australia, June 1953, L. D. Williams 16.

(171) SEPTORIA SILYBI Pass., *Atti Soc. Critt. Ital.*, 2:34.

On *Silybum marianum*, Meningie, S. Australia, June 1953, L. D. Williams 26.

Leafspots more or less circular, often demarcated by a dark line and with traces of zonation, brownish-grey, becoming pallid, smooth, shining, often raised above the general level of the leaf, up to 7 mm. diam., though usually smaller, numerous, rarely confluent. Pycnidia in mesophyll with the ostioles opening on upper surface, loosely scattered, black, globose, smooth, 50–100μ diam.; wall of meandering brown hyphae 4–5μ wide, much branched and agglutinate into a single layer, thin and leathery-membranous, not parenchymatous; ostiole very slightly papillate with a narrow round pore. Sporophores lining the loculus, very short, hyaline, simple, each producing a single apical spore. Spores extruded in a long white tendril, hyaline, filiform, up to 65 × 1·5μ, with numerous minute vacuoles but no septa, straight or slightly bent, smooth, thin-walled, the ends attenuate to a narrow apex and slightly wider base.

(172) SEPTORIA SP. INDET.

On *Wahlenbergia gracilenta*, Keith, South Australia, L. D. Williams, WARI 3695.

Leafspots often terminal, indefinite, whitish when dry, up to 5 mm. long, becoming greyish with formation of numerous pycnidia. Pycnidia closely scattered, immersed, globose, black, about 100μ diam., smooth, with apical round ostiole about 10μ diam.; wall of one or two layers of dark angular parenchyma with some traces on the exterior of formation from interwoven hyphae, the whole 5–8μ thick, bearing on the inner surface a rather close palisade of simple, continuous sporophores about 10μ long, each forming a single spore at its apex. Spores filiform, hyaline, greenish in mass, straight or slightly bent, the ends obtusely rounded, continuous or indistinctly 3-septate, smooth, 30–52 × 1·5–2μ.

This does not agree well with descriptions of species previously recorded on Campanulaceae, but no material of these was available for comparison.

(173) DINEMASPORIUM GRAMINUM Lev., var. STRIGULOSUM Karst., *Hedwigia* 1884, p. 21.

On dead leaves *Phragmites* sp., Meningie, S. Australia, L. D. Williams, WARI 3494, det. E. W. Mason.

(174) PESTALOTIA QUERCINA Guba, *Mycologia*, 24:380, 1932.

On old leaves of *Quercus* sp., Adelaide, March 1952, isolated in culture by A. Kerr.

Petri-dish cultures produce a white mycelial growth with scattered acervuli, which are frequently coalescent into black spore masses up to 4 mm. diam.; from single acervuli the spores sometimes issue in long twisted black tendrils. Spores 5-celled, fusoid-clavulate, tapering to the base, very slightly constricted at the septa, mostly 24–28μ long; the three median cells olivaceous, equally coloured, 15–18μ long; terminal cells hyaline, the apical cell conoid with a crest of 3 divergent setae 10–15 × 1μ; the basal cell conoid and with a terminal seta 5–7μ long.

(175) PESTALOTIA BANKSIAE Hansf., n. sp.

Gallae in fructibus productae, usque ad 7 cm. diam., durae, brunneae, tuberculatae, intus lignosae et hyphis hyalinis saepe aggregatis permeatae. Fungus culto mycelium album et acervuli numerosi ferens. Acervuli usque ad 1 mm. diam., nigri. Conidia fusoidea, 4-septata, cellulis mediis atro-olivaceis, leniter constrictis, levibus vel subtiliter granulosis, 14–20 × 6–7μ, cellulis terminalibus hyalinis, obtuse conoideis, 4–5μ longis; setae apicales 3, divergentes, hyalinae, solidae, usque ad 20 × 1μ; seta basale usque ad 10 × 1μ; corpora tota conidiorum 22–29μ longa.

Hab. in fructibus *Banksiae marginatae*, Keith, South Australia, Dec. 1953, J. B. Harris, WARI 3684.

Infected fruit-spikes show nearly every individual fruit greatly enlarged, and reach 7 cm. diam., to form a rough-tuberculate, woody, brown gall; internally the tissues are brown and woody, permeated by loose hyphae and masses or small sheets of white mycelium. In agar culture the fungus forms a white woolly aerial mycelium, with numerous black acervuli, mostly around the colony margin, which reach 1 mm. diam. Conidia fusoid, usually straight, with a basal setiform pedicel up to 10μ long, and three divergent apical setae up to 20 × 1μ; the body of the conidium is 22–29μ long by 6–7μ wide in the widest part, consisting of terminal small conoid hyaline cells each 4–6μ long, with three, uniformly dark olivaceous, central cells, measuring together 14–20 × 6–7μ, slightly constricted at the septa, the exterior smooth or indistinctly granulose. This was the only fungus isolated from the galled fruits, but has not yet been proved to be the cause of the disease.

(176) MONOCHAETIA MUEHLENBECKIAE McAlpine in Herb., n. sp.

Maculae amphigenae, in epiphyllo rotundatae, concentrice zonatae, usque ad 10 mm. diam. vel confluentes, linea atrobrunnea circumdatae, intus alternatim atro- et fulvobrunneo zonatae, haud secedentes, in hypophyllo minus distinctae. Acervuli amphigeni, plerumque epiphylli, dispersi, atro-brunnei vel subnigri, usque ad 100μ diam., primo velati, demum epidermidem irregulare disrumpenti. Sporae fusoideae, 21–26 × 2·5–5·5μ, transverse 4-septatae, utrinque hyalinae, cellulis mediis dilute olivaceis; cellula apicali conoidea, in setam terminaliam rectam vel curvulam, usque ad 10 × 1μ producta; cellula basali obtuse conoidea, seta recta 4–7μ longa excentrica praedita.

Hab. in foliis *Muehlenbeckiae adpressae*, Victoria (typus in Herb. Waite Institute, 2088).

The leafspots show on both sides of the leaf, on the upper surface rounded, concentrically zoned alternately with dark- and buff-brown, surrounded by a dark brown marginal line, up to 10 mm. diam., drying out but not secedent; on the lower surface the spots are less distinct. Acervuli amphigenous, mostly epiphyllous, evenly scattered over the centre of the leafspot, dark brown to almost black, up to 100μ diam., covered, then bursting the epidermis irregularly. Spores slightly bent, fusoid, 21–26 × 4·5–5·5μ, 4-septate, the end cells hyaline and conoid, the three middle cells pale olivaceous, smooth, and not constricted at the septa; apical cell produced into a terminal straight or slightly bent hyaline seta up to 10 × 1μ; basal cell with an excentric straight seta 4–7μ long.

(177) MONOCHAETIA LOMATIE McAlpine in Herb., n. sp.

Maculae 2–30 mm. diam., rotundatae vel confluentes, linea atrobrunnea circumdatae, luteae vel griseo-brunneae, haud secedentes, haud zonatae, arescentes. Acervuli amphigeni, nigri, plus minusve rotundati, usque ad 300μ diam., epidermidem rumpenti. Sporae late fusoideae, saepe curvulae, 15–20 × 5·5–7·0μ, 4-septatae, cellulis mediis castaneis, tunicatis (1·5μ), extus verruculosis, cellulis terminalibus hyalinis, conoideis, minutis, 2–3μ long. et lat.; seta basali 5–15μ longa, recta vel curvula, centrali; seta apicali usque ad 33μ longa, recta vel curvula.

Hab. in foliis *Lomatiae ilicifoliae*, Victoria, WARI 3728, ex Herb. Dept. Agr. Victoria.

Leafspots 2–30 mm. diam., round or confluent, each surrounded by a dark red-brown line, the centre uniformly yellow to greyish-brown, drying out but not secedent. Acervuli amphigenous, black, more or less circular, up to 300μ diam., at first covered, then bursting the epidermis. Spores broadly fusoid, often slightly bent, 15–20 × 5·5–7μ, 4-septate, not constricted, the terminal cells hyaline, obtusely conoid, 2–3μ long and wide; the central cells uniformly dark chestnut-brown, thick-walled (1·5μ), the surface coarsely and bluntly verruculose. Basal seta 5–15μ long, apparently central; apical seta a prolongation of the apical cell, up to 33μ long, both straight or bent.

(178) MONOCHAETIA UNICORNIS (Cke. & Ell.) Sacc., *Syll Fung.*, 18:485, 1906.

On *Cupressus* sp., Adelaide, Jan. 1952, N. T. Flentje.

(179) PAPULARIA ARUNDINIS (Corda) Fr., *Summa Veg. Scand.*, p. 509, 1849.

On old stems of Bamboo, Victoria, WARI 3727, ex Herb. Dept. Agr. Victoria; on old culms *Phragmites* sp., Meningie, S. Australia, WARI 3494, L. D. Williams.

(180) TETRAPLOA ARISTATA B. & Br., *Ann. Nat. Hist.*, 2:5:459, 1850.

On dead culm of *Bromus gussonii*, Meningie, South Australia, WARI 3525 p.p., L. D. Williams.

The conidia are about 35 × 18μ, composed of four lines of four cells each, slightly constricted at the septa, at the apex each line being produced into a beak up to 80μ long, paler brown towards its obtuse apex 3μ wide, slightly wider at the base, 2–4-septate, smooth; the body of the spore is closely verruculose in the lower half. The conidia are single and acrogenous on very short erect branches of the mycelium, sometimes almost sessile on the repent hyphae.

(181) MONOSPORELLA SETOSA (B. & C.) Hughes, *Canad. Journ. Bot.*, 51:654, 1953.

On wood, Hermitage, S. Australia, Oct. 1922, G. Samuel, WARI 2096.

(182) STEMPHYLIUM LANUGINOSUM Harz., *Bull. Soc. Imper. Moscou*, 44:132, 1871.

On dead haulms *Solanum tuberosum*, Mt. Gambier, South Australia, April 1917, G. Samuel, WARI 1828, p.p.

(183) CERCOSPORA LORANTHI McAlpine, PROC. LINN. SOC. N.S.W., 28:96, 1903.

On *Loranthus pendulus*, Black Swamp, S. Australia, June 1914, T. G. Osborn, WARI 1995.

Leafspots amphigenous, mostly epiphyllous, rounded, up to 4 mm. diam., raised, grey, turning olivaceous with almost a continuous layer of densely fasciculate, erumpent conidiophores. Internal mycelium penetrating the whole mesophyll and causing some hypertrophy, not extending much beyond the edges of the visible spots and then only as single intercellular hyphae; in the tissues of the leafspots aggregated to form sheets or masses of pseudoparenchyma between the browned host cells; hyphae hyaline, not forming haustoria. The mycelium aggregates beneath the epidermis to form a stroma of olivaceous pseudoparenchyma, which extends outwards through the epidermis, at first in separated masses between the host cells, but soon becoming laterally confluent and up to 60μ thick, crushing the epidermal cells, which are thrown off. The external surface of this stroma is covered with a close palisade of short olivaceous conidiophores, erect, simple, continuous, up to 25 × 4–5μ, producing conidia singly at the apex. The very slightly prominent scar left by the conidium becomes lateral by continued growth of the conidiophore, so that old conidiophores are slightly geniculate and roughened by successive conidial scars in the upper part, about 2μ apart. Conidia versiform, from ellipsoid to obclavate or elongate, 0–3-septate, not constricted at the septa, pale olivaceous, the base internally rounded but externally with slightly prominent flat hilum, slightly attenuated towards the rounded apex, thin-walled, smooth, 15–60 × 3·5–4·5μ, the apex 2·5–3·0μ wide.

NOTES ON AUSTRALIAN BEETLES IN THE TRIBE BOLBOCERATINI FORMERLY IN THE GENUS *BOLBOCERAS*.

By HENRY F. HOWDEN, Department of Zoology and Entomology, University of Tennessee, Knoxville, Tennessee.

(*Communicated by Dr. P. B. Carne.*)

[Read 28th July, 1954.]

Synopsis.

The name *Bolboceras* could not be applied to any Australian species of the subfamily Bolboceratini. Consequently Boucomont's subgeneric names *Blackburnium, Bolborhachium*, and *Bolbapium* are elevated to generic rank and a key is given to the Australian genera in the subfamily. Also new names are proposed for two synonyms: *Blackburnium quadriarmigerum* new name for *Bolboceras armigerum* MacLeay and *Blackburnium bifoveatum* new name for *Bolboceras cornigerum* MacLeay.

In a recent publication Cartwright (1953, *Proc. U. S. N. M.*, 103:95–120) has shown that the name *Bolboceras* should be applied to a small genus of beetles represented by ten North American and one European species. Cartwright (1953, p. 101) presents the reasons as follows:

> "The genus *Bolboceras* was erected by Kirby in 1818 for the eight species *Scarabaeus mobilicornis* Linnaeus [should read Fabricius], *S. mobilicornis* var. *testaceus* Fabricius, *S. quadridens* Fabricius, *S. farctus* Fabricius, *S. lazarus* Fabricius, *S. cyclops* Olivier, *S. cephus* Fabricius, and *Bolboceras australasiae* Kirby. Technically no genotype was designated although he wrote, 'My details of *Bolboceras* were taken from *B. quadridens*'. Nearly all of the species mentioned have since been moved to other genera. Curtis, 1829 (British Ent., vol. 1, pt. 1, p. 74), selected the species *Scarabaeus mobilicornis* Fabricius [= *armiger* Scopoli] as the type of *Bolboceras*. Therefore, since our species of *Odontaeus* are congeneric with *mobilicornis*, they now take the generic name *Bolboceras* and it becomes necessary to find an available name for those species we have formerly placed in *Bolboceras*."

Several names formerly placed in synonymy and a number of subgeneric names are available. Most of these names are applicable to European and American forms which are quite distinct from the Australian species. Of these only three seem easily referable to the Australian forms. *Blackburnium, Bolborhachium* and *Bolbapium* were proposed as subgenera under *Bolboceras* by Boucomont (1910, *Ann. Soc. ent. Fr.*, 79:339–340) and are herein slightly modified and raised to generic rank.

With some redefinition of generic characteristics, most of the Australian species can be included in the genus *Blackburnium*. Boucomont's description, translated from the French, is as follows (1910, p. 339): First joint of the antennal club with a denuded area not clearly delimited; anterior edge of the prothorax bearing behind the eyes two little round and deep foveae; prosternal cavities carinate at the external edge; anterior lobe of the mesosternal plate tectiform or more exactly cariniform, raised in front like the prow of a boat; posterior lobe terminated in an acute angle with an abrupt edge and vertical slant; first stria of elytra, as in most of the Australian species, reaching the base by going around the scutellum from which it is separated by a fine carina; base of elytra carinate.

From the material the writer has examined it seems doubtful if several of the above characters should be given generic weight. Deep foveae can be found behind the eyes in some species, indications of them in other species, and in many cases they are completely lacking. It is also doubtful if the sexual characteristics or carinate prosternal cavities are good generic characteristics. However, further study of more adequate collections than the writer has available may warrant not only the use of the above characters but the establishment of a number of new genera.

The species in *Blackburnium* as here defined have the first elytral stria curving around the scutellum, reaching the base of the elytra; elytra with seven striae between suture and humeral umbone; base of elytra margined; mesosternal coxae separated by the mesosternal plate which is tectiform or slightly to conspicuously cariniform, raised anteriorly like the prow of a boat, although in some cases this "prow" is almost truncate. Pronotum with or without horns, but lacking a transverse carina in front of the posterior pronotal margin.

Type of *Blackburnium* as designated by Boucomont (1910, p. 339): *B. reichei* Guérin. The genus seems to be entirely Australian, including most of the Australian species formerly placed in *Bolboceras*.

The second of Boucomont's subgenera, *Bolborhachium*, here accorded generic status, has the prothorax with an abrupt, carinate edge parallel to the base, the prothorax before the carina abruptly declivous, often excavated; first elytral stria shortened, barely reaching scutellum; elytral base margined; seven striae between suture and humeral umbone; mesosternal plate anteriorly flat between the middle coxae and truncate in front.

Type of *Bolborhachium* as designated by Boucomont (1910, p. 339): *B. recticorne* Guérin. Less than ten species have been placed in this strictly Australian genus.

The third of Boucomont's subgenera accorded generic rank is *Bolbapium*. As defined by Boucomont the genus includes both Australian and South American species. Since none of the Australian species have been examined, a translation of Boucomont's description is given unchanged (1910, p. 340): Elytra with five striae between the humeral umbone and the suture, the first reaching the base; ocular cavities of the prosternum large, with lateral edges at a right angle with a carina at the intersection of the two planes; mesosternal plate large, convex, pear-shaped.

Most species with elytral base unmargined. However, several Australian species, according to Boucomont, have a small basal carina and their present inclusion in this genus is open to question.

To facilitate the placement of the Australian species in the tribe Bolboceratini a brief key to the genera is included below.

1. Scutellum very narrow, almost linear .... *Stenaspidius*
Scutellum triangular, not linear 2

2. Eyes entirely divided; colour uniform brown or black. North American and European species .... *Bolboceras* (formerly *Odontaeus*)
Eyes not entirely divided by a canthus 3

3. Middle coxae subcontiguous, mesosternum linear between coxae 4
Middle coxae separated one from the other by the anterior lobe of the mesosternal plate which is never linear 5

4. Elytra with five dorsal striae between suture and humeral umbone; males with clypeus not greatly elongated .... *Eucanthus*
Elytra with seven dorsal striae between suture and humeral umbone; males with mouth inferior with clypeus greatly elongated .... *Elaphastomus*

5. Elytra with five striae between suture and humeral umbone .... *Bolbapium*
Elytra with seven striae between suture and humeral umbone 6

6. Mesosternal plate tectiform or cariniform, often raised in front like the prow of a boat; sutural striae of elytra curving around scutellum to the base .... *Blackburnium*
Mesosternal plate flat, truncate in front; sutural striae of elytra short, barely reaching scutellum .... *Bolborhachium*

Further study and more adequate material will undoubtedly show the necessity for the establishment of additional genera or more adequate definition of the present ones.

The names of several of the Australian species have been found preoccupied and therefore should be renamed.

BLACKBURNIUM QUADRIARMIGERUM, new name.

For *Bolboceras armigerum* Macleay, 1873, *Trans. Entomological Soc. N. S. Wales*, 2:360. Not *Bolboceras armiger* Scopoli, 1772, *Ann. Hist.*, 5:78.

BLACKBURNIUM BIFOVEATUM, new name.

For *Bolboceras cornigerum* MacLeay, 1873, *Trans. Entomological Soc. N. S. Wales*, 2:363. Not *Bolboceras cornigerus* Melsheimer, 1844, *Proc. Acad. Nat. Sci. Phila.*, 2:138.

The writer is indebted to Dr. P. B. Carne, Division of Entomology, Commonwealth Scientific and Industrial Research Organization, Canberra, for his advice and for numerous specimens.

ANTIRRHINUM RUST, *PUCCINIA ANTIRRHINI* D. & H., IN AUSTRALIA.

By J. Walker, Biological Branch, New South Wales Department of Agriculture.

(Plate vii; two Text-figures.)

[Read 25th August, 1954.]

Synopsis.

The rust disease of *Antirrhinum* spp. caused by the fungus *Puccinia antirrhini* D. & H. is recorded from Australia. All plant parts except the petals and the roots were attacked and severe damage was caused. A determination of the physiologic race of rust present showed that it is similar to the virulent race known in America as race 2. Studies on uredospore longevity indicated that these spores remained alive longest at low temperatures and relative humidities and their longevity fell off as both temperature and humidity rose.

The origin and the spread of the disease in Australia are discussed. An American origin for the disease is proposed and evidence is presented to show the importance of wind-borne uredospores in the spread of this disease.

Introduction.

The rust disease of *Antirrhinum* spp. caused by the parasitic fungus *Puccinia antirrhini* Dietel and Holway is the most destructive disease of these plants known. Until October, 1952, it had not been recorded in Australia, but at that time a severe outbreak occurred in New South Wales in the Sydney metropolitan area, and within a short time it had spread throughout eastern New South Wales. Since then it has been recorded from Victoria, Queensland, South Australia and Tasmania. In this paper details of the work carried out on this disease since its first outbreak are given.

History of the Disease.

Antirrhinum rust was first recorded by Blasdale (1903), who, in 1895, had found it doing considerable damage in Californian gardens. Specimens of the rust had been collected in California before this date, however, and a specimen in Professor J. C. Arthur's collection from Santa Cruz is dated 1879 (Peltier, 1919). The fungus was described as *Puccinia antirrhini* by Dietel and Holway (1899) from specimens submitted by Blasdale.

In 1913 the disease was recorded from the eastern State of Illinois, and by 1919 (Peltier, 1919) had spread throughout the United States. In 1921 it was reported by Dickson (1921) from Canada, and in 1922 Whetzel (1924) found it causing severe damage to snapdragons in Bermuda.

Up to 1931 no new records of rust were made, but Lepik (1941) states that, in that year, Viennot-Bourgin reported it in the north of France. Soon after, the disease was reported in England. Green (1933), reporting the outbreak, stated that the rust appeared at a number of localities simultaneously and that spread was rapid and destructive. Spread to other European countries occurred rapidly, and four years later it had been recorded from as far east as Odessa (Lepik, 1941), Palestine (Rayss, 1937) and Egypt (Fikry, 1937). More recently it has been recorded in South Africa (Bottomley, 1940), Norway (Jorstad, 1946) and Tanganyika (Wallace, 1952).

The first record of the disease in Australia was made during October, 1952, on plants growing in a Sydney (N.S.W.) suburban nursery. It spread rapidly and within eighteen months was common in eastern New South Wales and had been reported from all other States of the Commonwealth with the exception of Western Australia. Details of its spread are given in the "Epidemiology" section below.

More recently, in December, 1953, rust was reported in New Zealand at Auckland. So far, no further spread in that country has been noticed (Brien, 1954, personal communication).